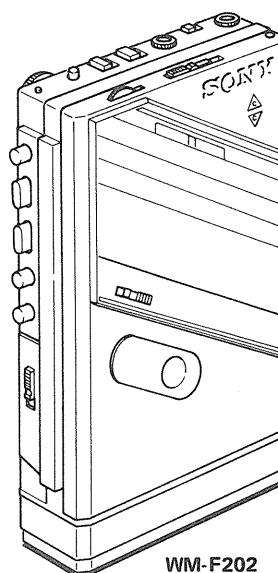


# WM-F200/F202

## SERVICE MANUAL

• WM-F200  
US Model

• WM-F202  
E Model



WM-F202

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

### Radio section

Frequency range FM: 88–108 MHz  
AM: 530–1,605 kHz  
Antennas FM: Headphone cord antenna  
AM: Built-in ferrite bar antenna

### Tape recorder section and general

Frequency response (DOLBY NR OFF)  
40–15,000 Hz (playback, with the PB EQ selector set to CrO<sub>2</sub>/METAL)  
40–15,000 Hz (playback, with the PB EQ selector set to NORM)  
50–9,000 Hz (with the PB EQ selector set to NORM)  
Input External microphone input (stereo minijack) (PLUG IN POWER) sensitivity 0.3 mV (–68 dB) for low impedance microphone  
Output Headphones (stereo minijack) load impedance 8–300 ohms or higher than 10 kilohms  
Power output 4 mW + 4 mW at dc operation (at 10% harmonic distortion)  
Power requirements 1.5 V dc  
Rechargeable battery (supplied): WM-F200  
One size AA (IEC designation LR6) battery  
DC IN 1.5 V jack on the battery case accepts:  
Sony AC-D1 ac power adaptor (optional) for use with 120 V ac, 60 Hz: WM-F200  
Sony AC-D1 AC power adaptor (optional) for use with 110, 120, 220 or 240 V AC, adjustable: WM-F202  
Sony EBP-10 battery case (optional) for use on two size AA batteries (IEC designation LR6)  
Sony DCC-70 car battery cord (optional) for use with 12 V car battery

### Tape Transport Mechanism Type

MF-WMF202-01

0 dB = 0.775 V

### Battery life

(hours)

| Battery                                      | FM reception | Tape playback | Radio recording | Microphone recording |
|----------------------------------------------|--------------|---------------|-----------------|----------------------|
| Supplied rechargeable (NC-5WM) full charged) | Approx. 10   | Approx. 2     | Approx. 1.5     | Approx. 2            |
| WM-F200                                      |              |               |                 |                      |
| Sony SUM-3 (NS) New Super                    | Approx. 10   | Approx. 2     | Approx. 1       | Approx. 2            |
| Sony Eveready AM3 alkaline                   | Approx. 20   | Approx. 4     | Approx. 2       | Approx. 4            |

### Dimensions

Approx. 69.8×110.8×23 mm  
(2<sup>3</sup>/<sub>4</sub>×4<sup>3</sup>/<sub>8</sub>×<sup>7</sup>/<sub>8</sub> inches) (w/h/d)  
(with the rechargeable battery case attached) not incl. projecting parts and controls  
Approx. 69.8×119.4×23 mm  
(2<sup>3</sup>/<sub>4</sub>×4<sup>3</sup>/<sub>8</sub>×<sup>7</sup>/<sub>8</sub> inches) (w/h/d)  
(with the battery case attached) not incl. projecting parts and controls  
Approx. 76.1×112.8×25.4 mm  
(2×4<sup>1</sup>/<sub>2</sub>×<sup>31</sup>/<sub>32</sub> inches) (w/h/d)  
(with the rechargeable battery case attached) incl. projecting parts and controls

Approx. 76.1×121.4×25.4 mm  
(2×4<sup>7</sup>/<sub>8</sub>×<sup>31</sup>/<sub>32</sub> inches) (w/h/d)  
(with the battery case attached) incl. projecting parts and controls

### Weight

Approx. 230 g (7.2 oz) incl. rechargeable battery and the rechargeable battery case, not incl. other accessories: WM-F200  
Approx. 230 g (7.2 oz) incl. battery and the battery case, not incl. other accessories

STEREO CASSETTE-CORDER  
**SONY**®

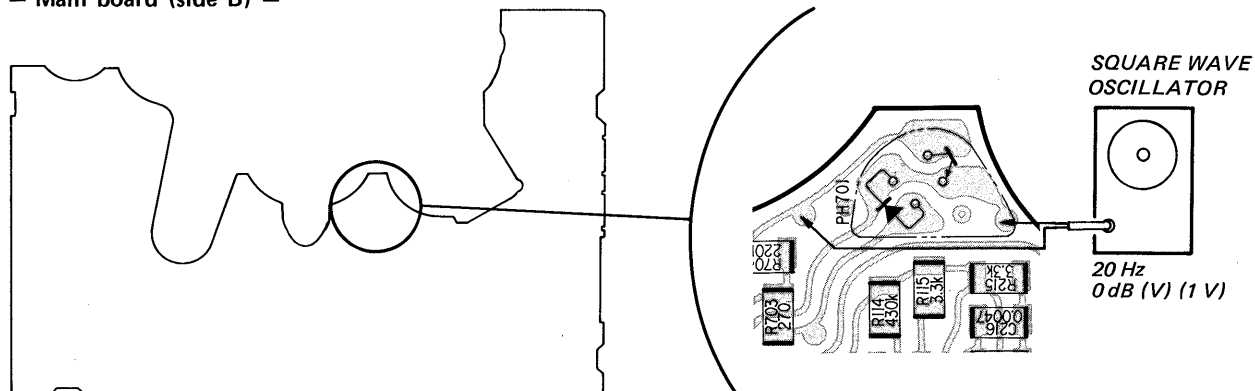
TC



- ## Servicing Note

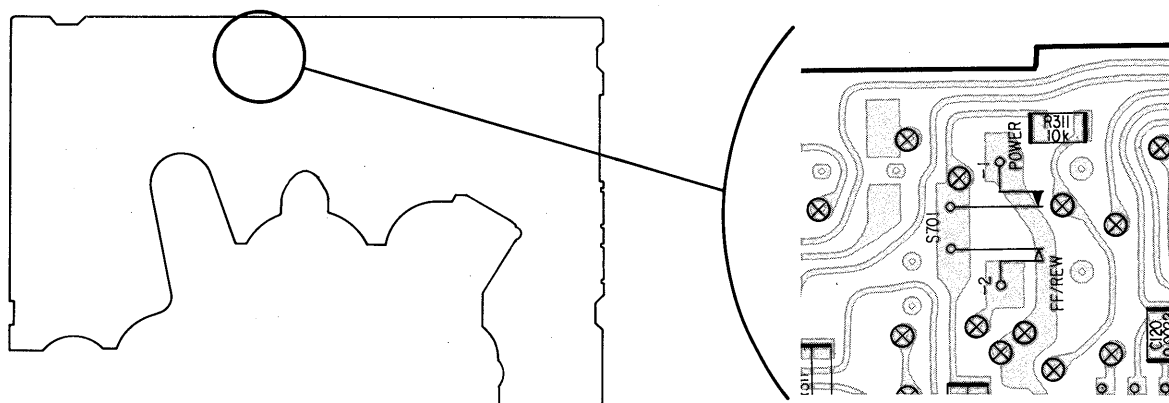
Operation check can be done by the method shown below even when the main board is removed.

— Main board (side B) —



- For **PLAY**, press the ► button and turn only the **POWER** switch ON.
- For **FF** and **REW**, press ►► or ◀◀ button and turn both **POWER** switch and **FF/REW** switch ON.

— Main board (side A) —



### Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

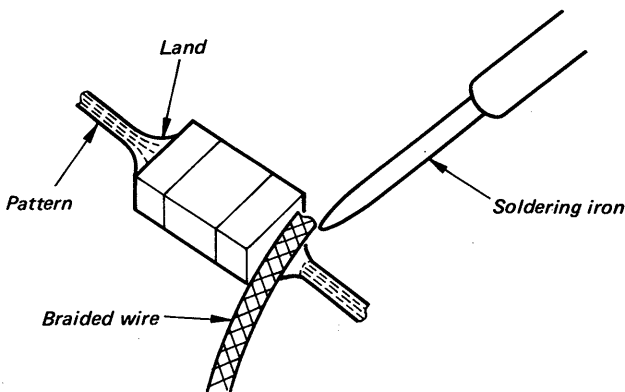
#### Precautions for replacement

1. Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.
2. Never re-use a disconnected chip component. Dispose of all old chip components.
3. To protect the chip component, heating time for attaching the component should be within 3 seconds.

#### ○ Removing chip components

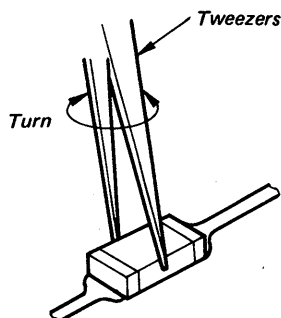
##### (1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



##### (2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off. Never re-use a disconnected chip component.



##### (3) Smoothing the soldered surface

After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

#### ○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

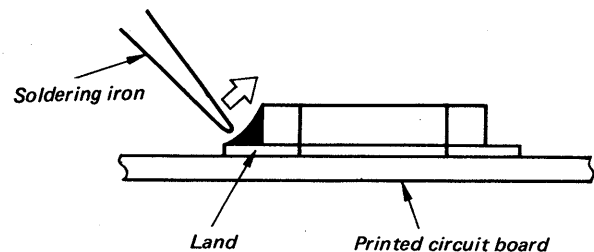
##### (1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



##### (2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



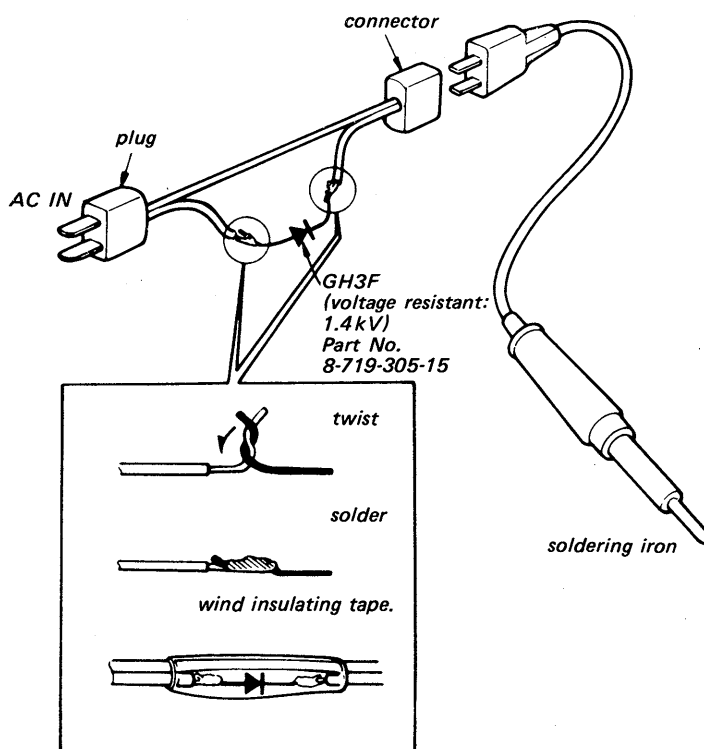
##### (3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

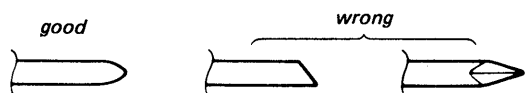
## Flexible Circuit Board Repairing

1. Keep the temperature of the soldering iron at  $270^{\circ} \pm 10^{\circ} \text{C}$  during repairing.  
You can maintain the temperature of the soldering iron around  $270^{\circ} \text{C}$  by using the thermal controller as illustrated on the right.
2. Do not touch the soldering iron more than 4 seconds or 3 times on the same conductor of the circuit board.
3. Do not apply force on the conductor when soldering or unsoldering.

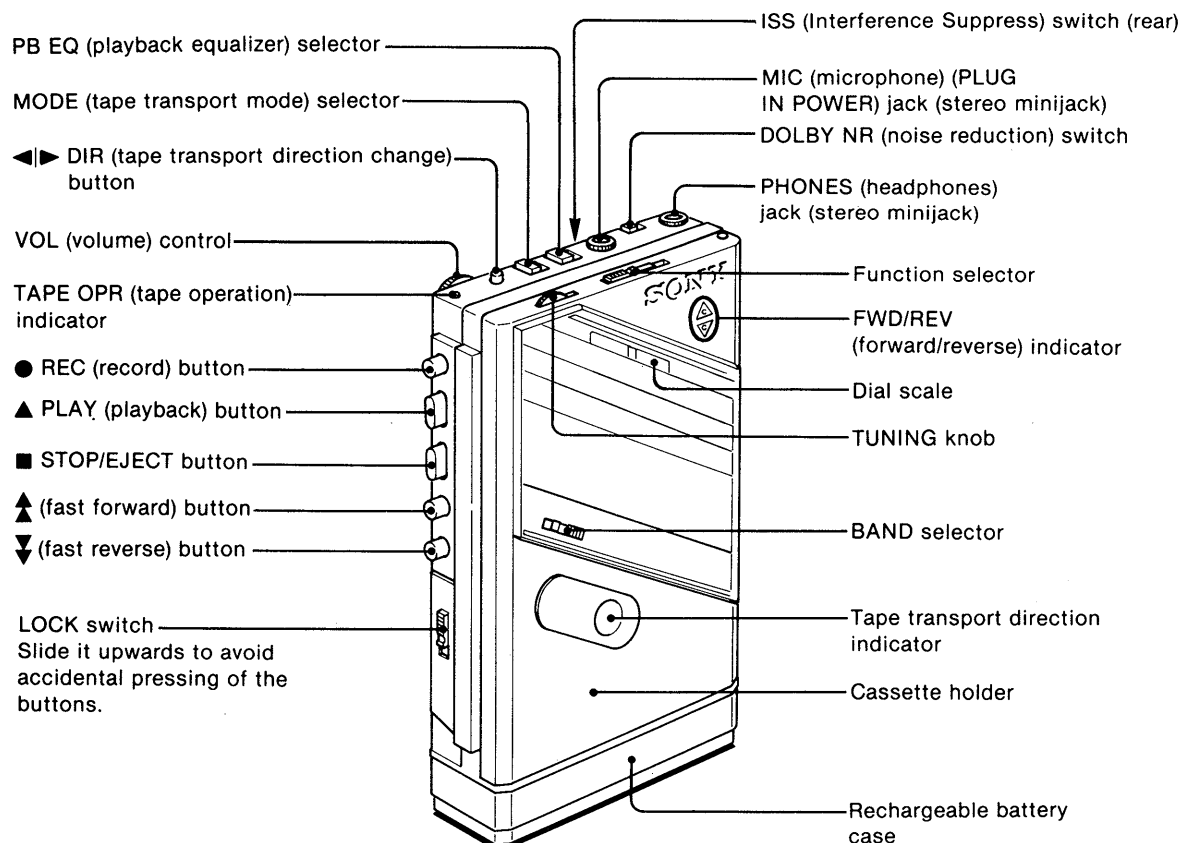
## To make thermal controller of soldering iron

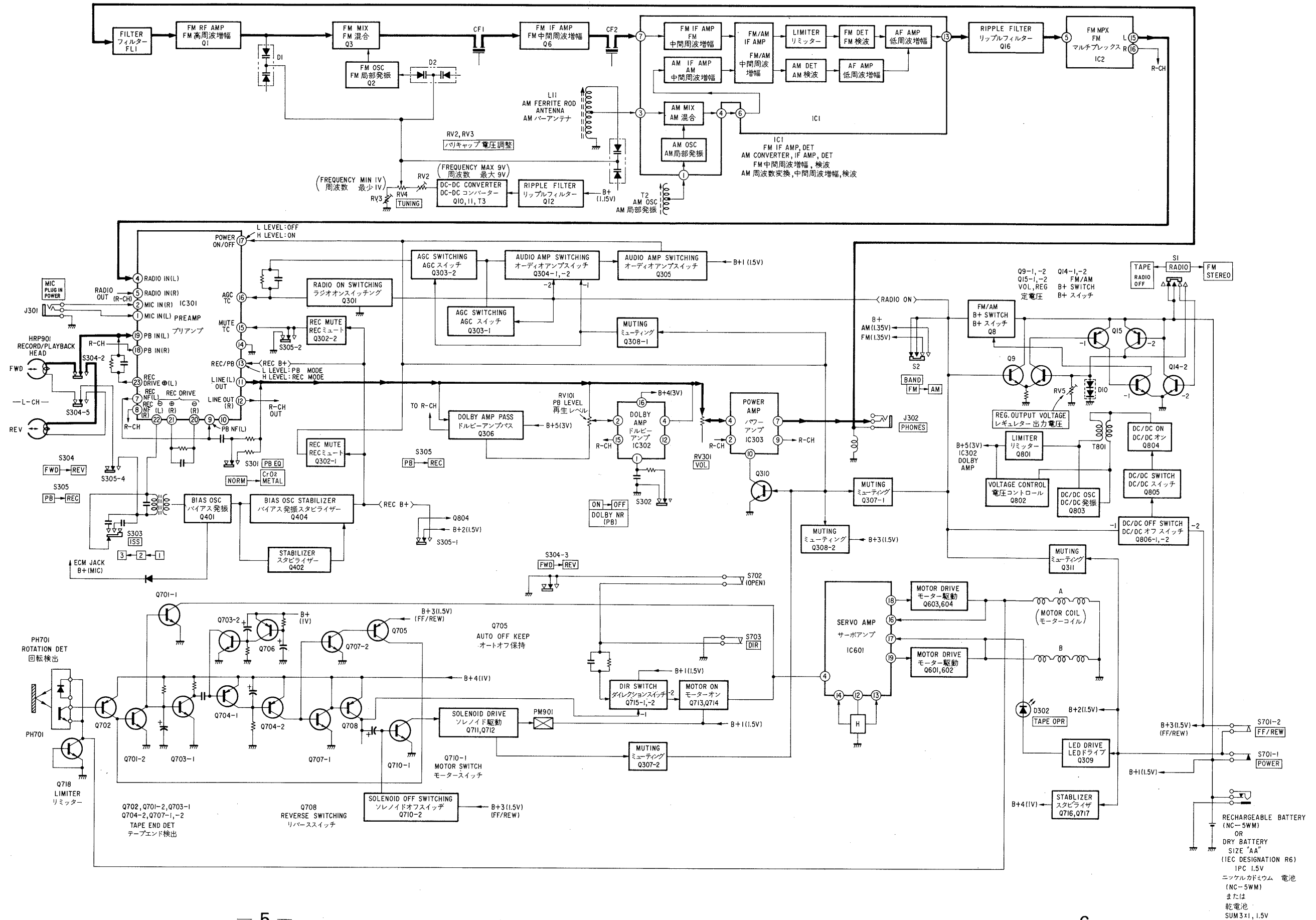


## Tip of soldering iron



## PARTS IDENTIFICATION

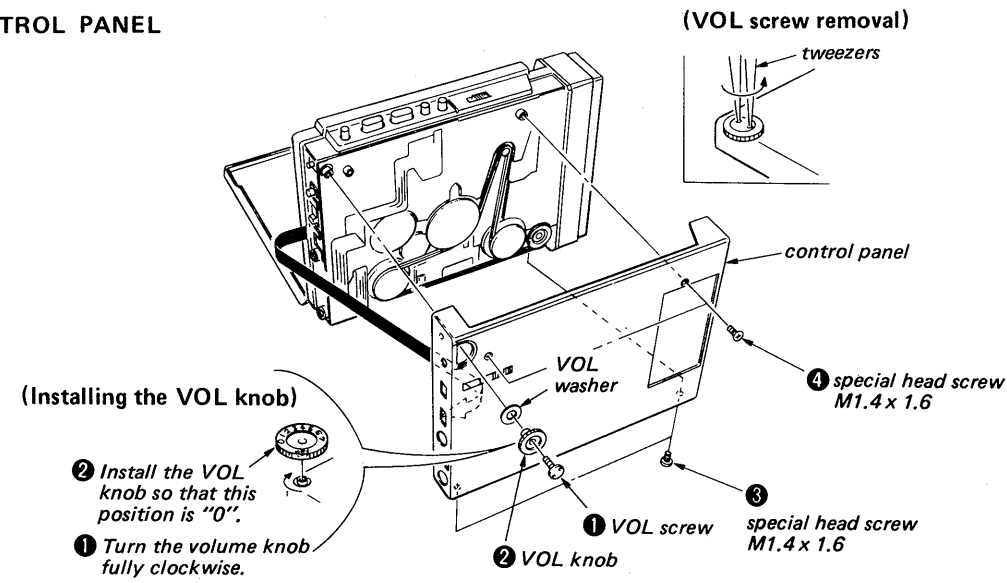


SECTION 1  
BLOCK DIAGRAM

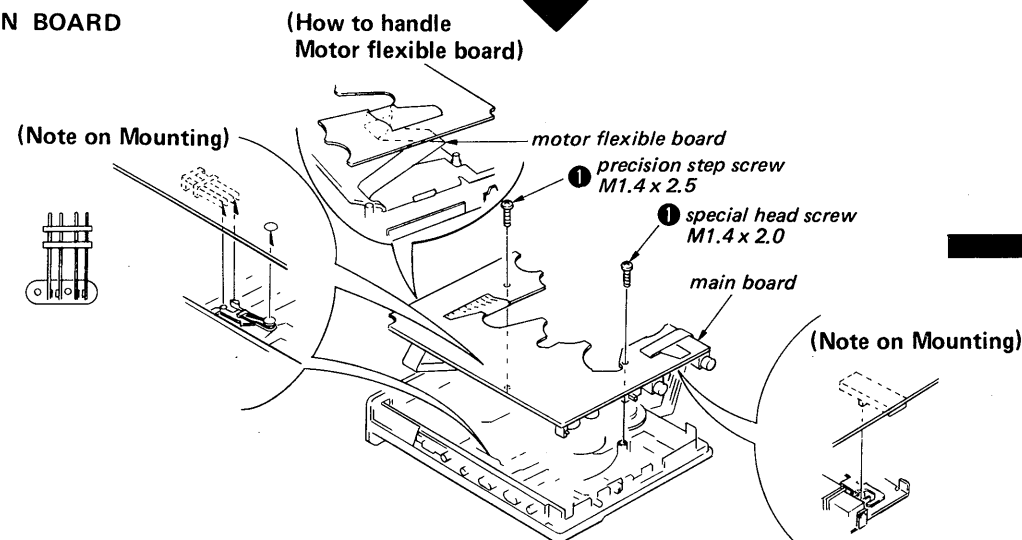
## SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

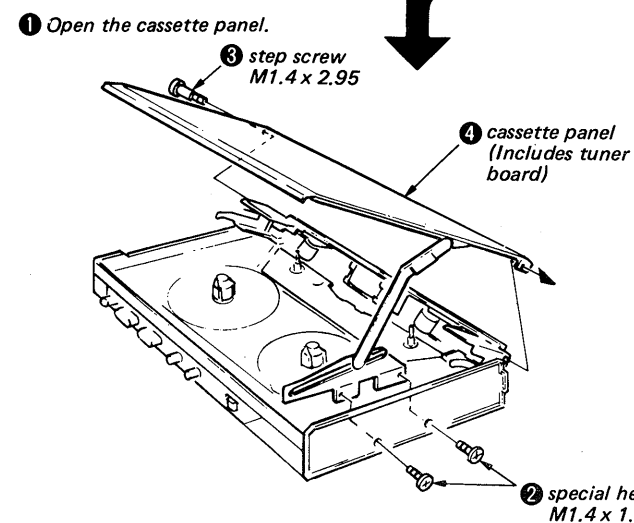
### CONTROL PANEL



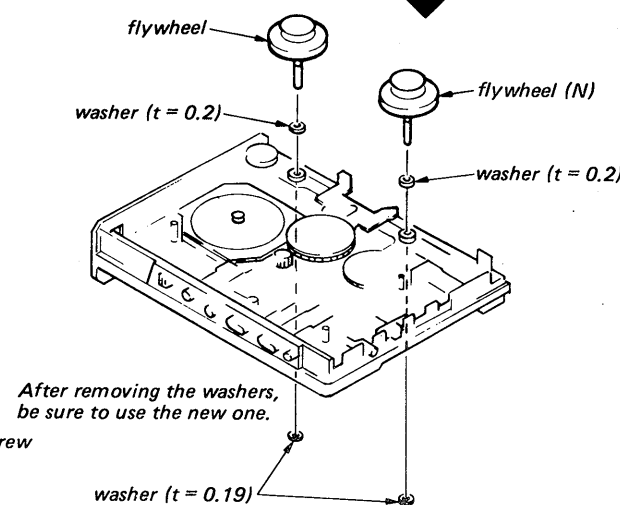
### MAIN BOARD



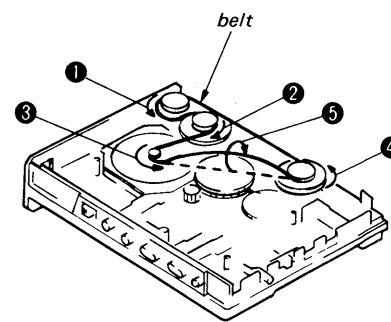
### CASSETTE PANEL



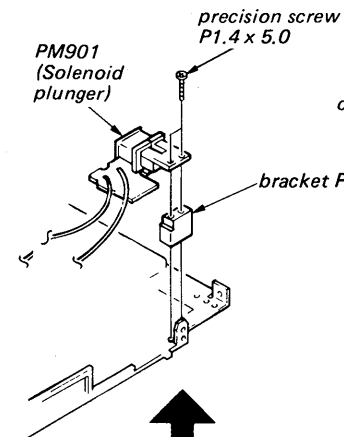
### FLYWHEEL



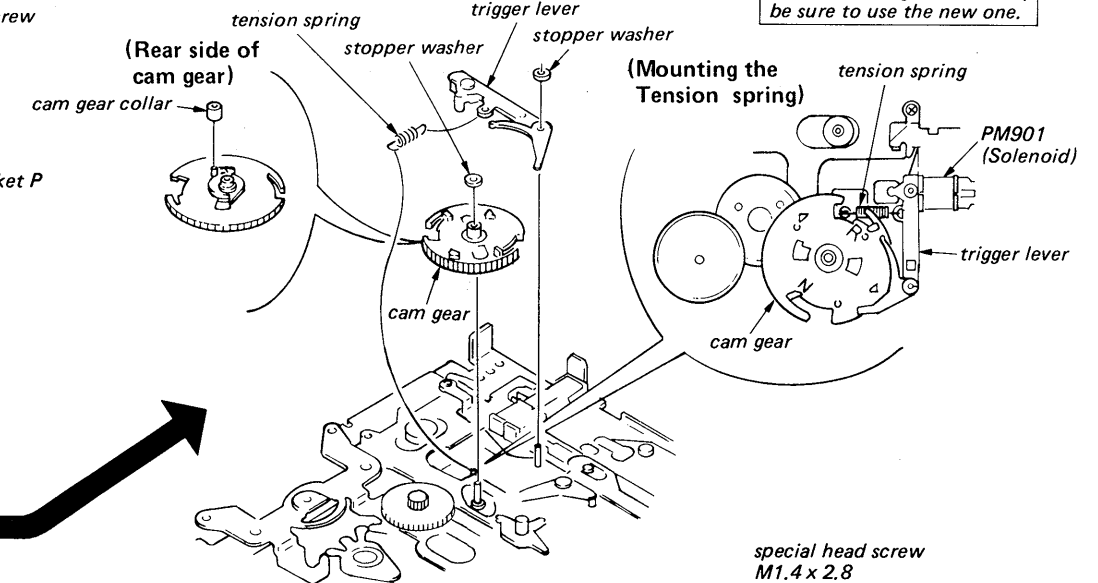
### INSTALLING THE BELT



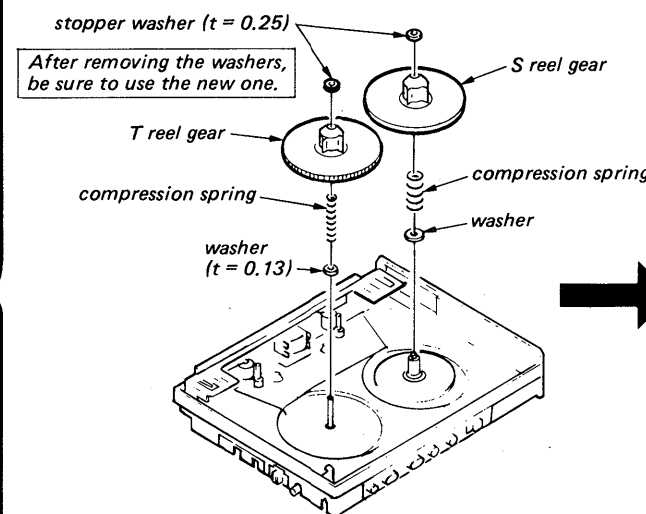
### SOLENOID PLUNGER



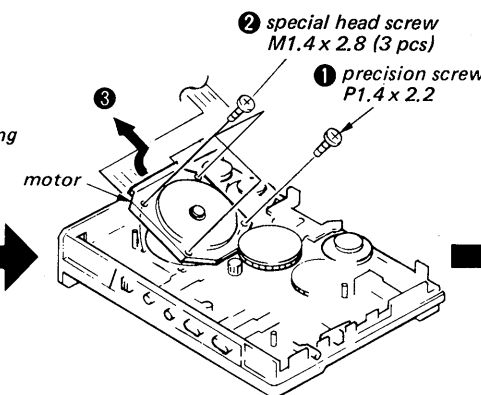
### TRIGGER LEVER, CAM GEAR



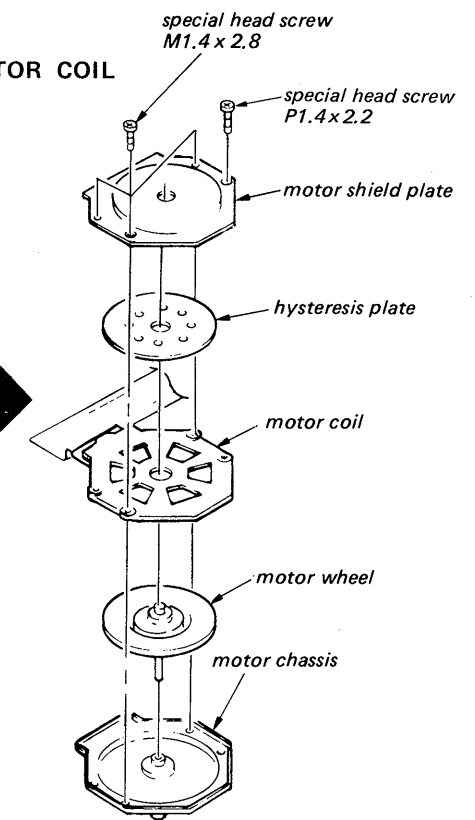
### REEL GEAR



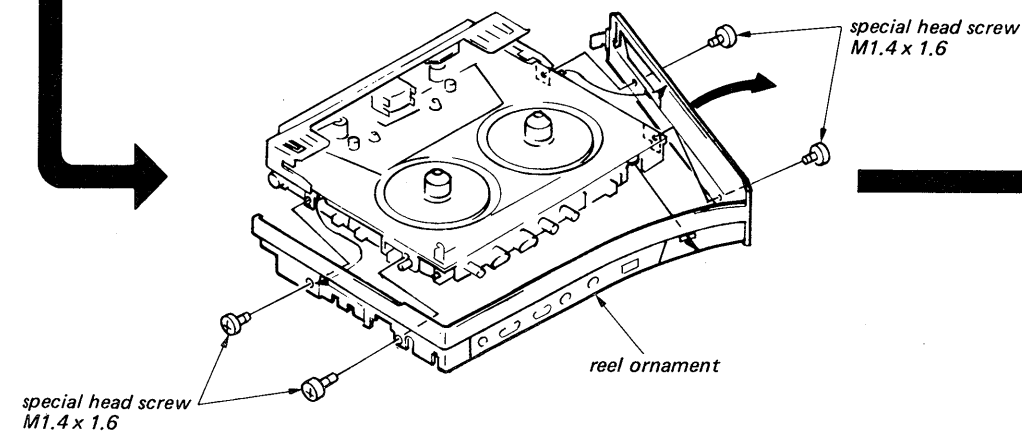
### MOTOR



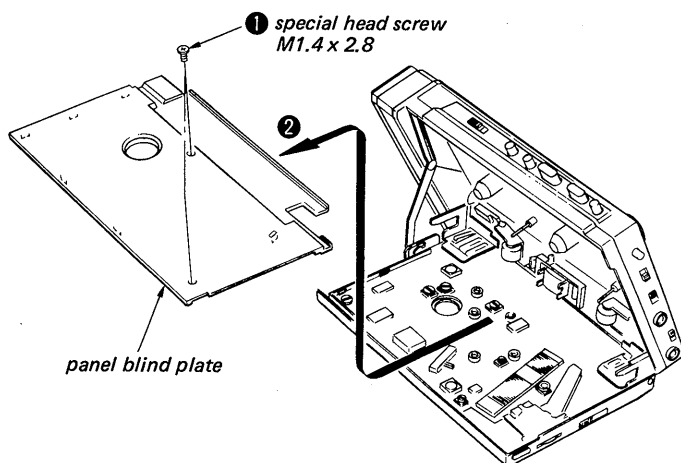
### MOTOR COIL



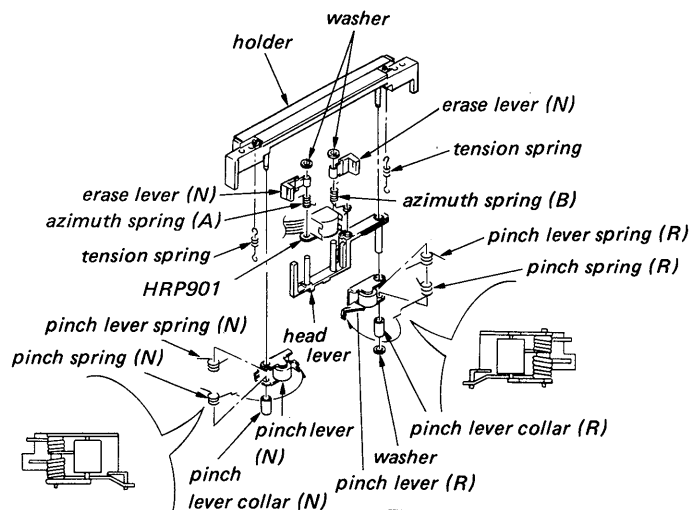
### REEL ORNAMENT



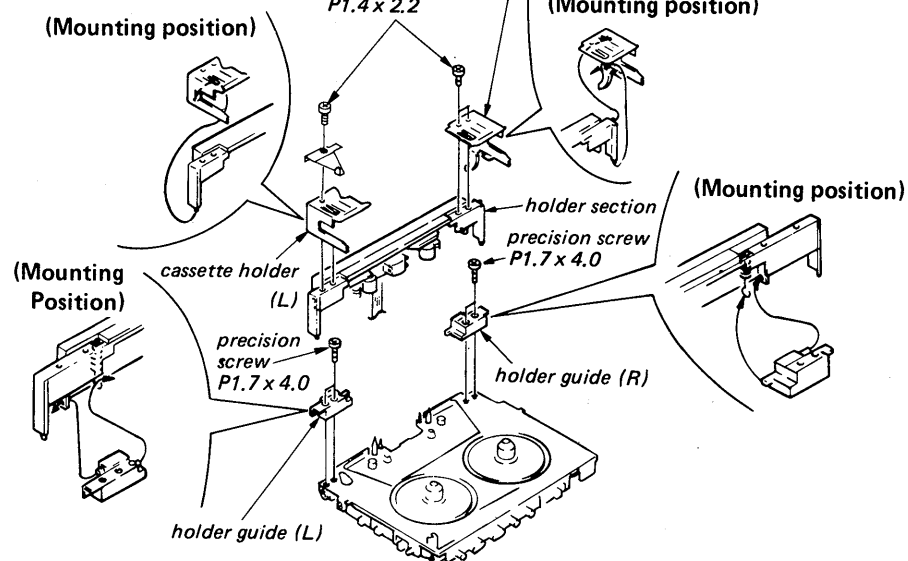
## TUNER BOARD



## HEAD AND PINCH ROLLER



## HOLDER

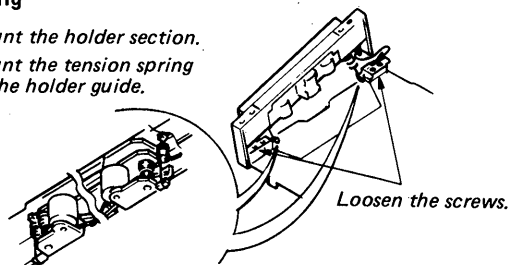


### Removal

- 1 Remove the cassette holder and remove the holder guide screws.
- 2 Remove the holder section in the direction of the arrow.

### Mounting

- 1 Mount the holder section.
- 2 Mount the tension spring on the holder guide.



It is easier to install when the tension spring is hooked on the holder guide as illustrated.

## SECTION 3 ADJUSTMENTS

### MECHANICAL ADJUSTMENTS AND MEASUREMENT

#### PRECAUTION

- Clean the following parts with a denatured alcohol-moistened swab:
 

|               |              |
|---------------|--------------|
| playback head | rubber belts |
| capstan       | idlers       |
| pinch roller  |              |
- Demagnetize the playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage (1.3V) unless otherwise noted.

#### Torque Measurement

| Mode             | Torque Meter | Meter Reading                               |
|------------------|--------------|---------------------------------------------|
| FWD              | CQ-102C      | 25 – 38 g•cm<br>0.35 – 0.52 oz•inch         |
| FWD Back Tension |              | 1.5 – 3 g•cm<br>0.02 – 0.04 oz•inch         |
| REV              | CQ-102RB     | 25 – 38 g•cm<br>0.35 – 0.52 oz•inch         |
| REV Back Tension |              | 1.5 – 3 g•cm<br>0.02 – 0.04 oz•inch         |
| FF               | CQ-201B      | more than 70 g•cm<br>more than 0.97 oz•inch |
| REW              |              | more than 70 g•cm<br>more than 0.97 oz•inch |

#### Tape Pulling Force Measurement

| Mode | Tension Meter | Meter Reading                      |
|------|---------------|------------------------------------|
| FWD  | CQ-403A       | more than 60 g<br>more than 2.1 oz |
| REV  | CQ-403R       | more than 60 g<br>more than 2.1 oz |

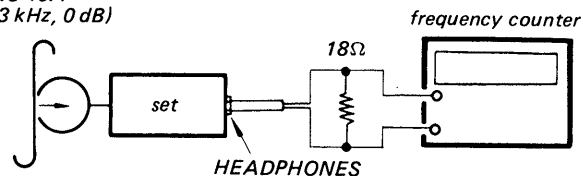
#### Standard Playback Level:

- Standard test tape: P-4-L300 (315 Hz, 0 dB)
- VOL is set to the position so that -20 dB (77.0 mV) is obtained across 18Ω load at PHONES jack.

#### Tape Speed Adjustment

##### Procedure:

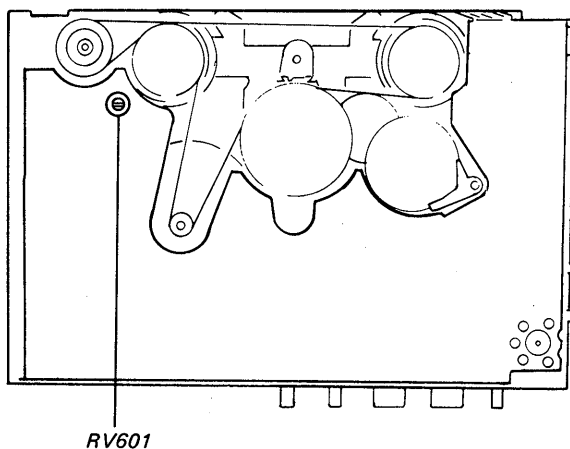
test tape  
WS-48A  
(3 kHz, 0 dB)



- Play back WS-48A (Tape center portion) in FWD mode.  
Adjust the RV601 so that the frequency counter reads 2,970 Hz – 3030 Hz (-1% – +1%).
- Play back WS-48A (Tape center portion) in REV mode.  
Confirm that the reading of frequency counter is within 1.5% from the reading in step 1.

#### Adjustment Location:

Main Board – Side B –



### Playback Head Azimuth Adjustment

**Note:** Adjustment should be made in both directions of FWD and REV.

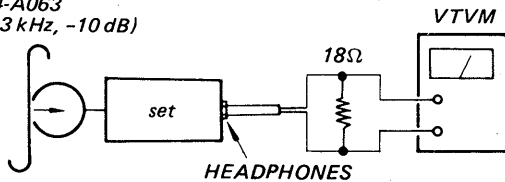
Adjustment screws should be stopped by turning in the clockwise direction.

After the adjustment, lock the screws with locking compound.

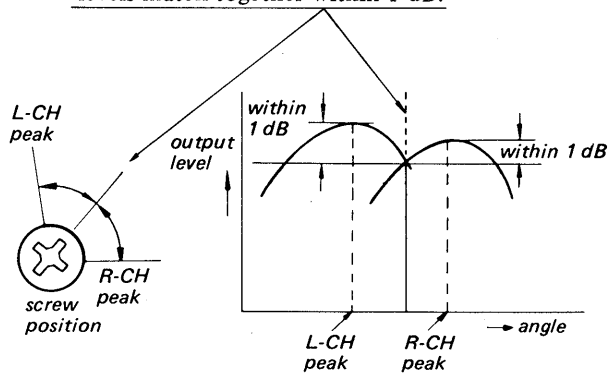
#### Procedure:

1. Playback mode

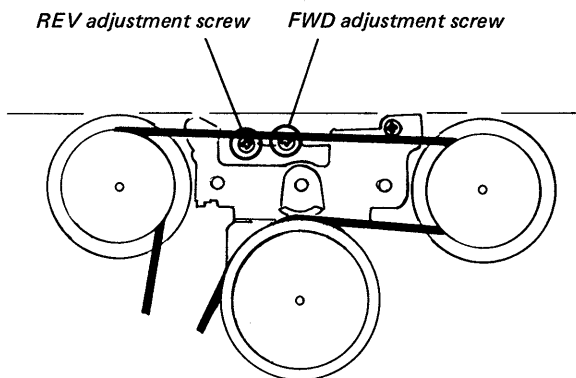
test tape  
P-4-A063  
(6.3 kHz, -10 dB)



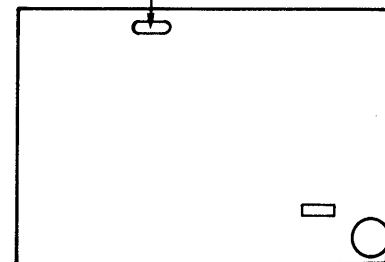
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



#### Adjustment Location:

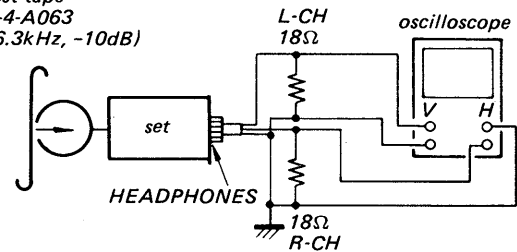


Remove blind sheet when the adjustment is performed with the rear case installed.



### 3. Phase Check

test tape  
P-4-A063  
(6.3 kHz, -10 dB)



| Screen Pattern |     |     |       |      |
|----------------|-----|-----|-------|------|
|                |     |     |       |      |
| in phase       | 45° | 90° | 135°  | 180° |
| good           |     |     | wrong |      |

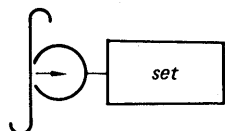
## Playback Level Adjustment

DOLBY NR switch . . . . . OFF  
VOL knob . . . . . MINIMUM

### Procedure:

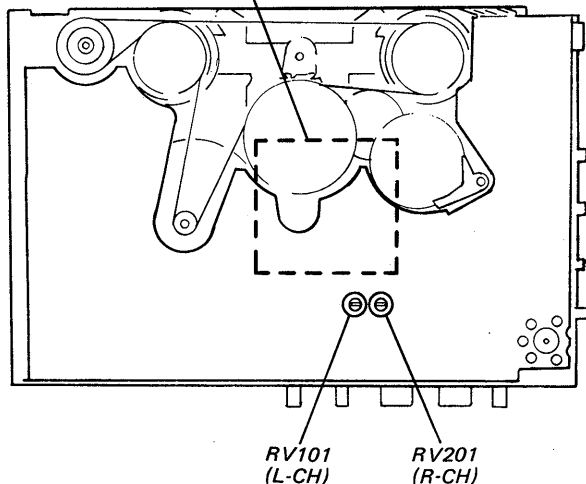
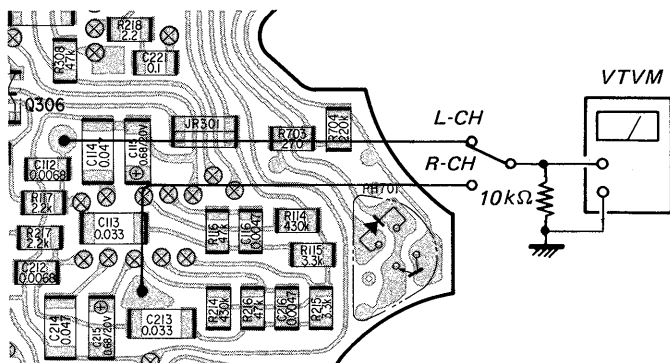
1. Playback mode

test tape  
P-4-L300  
(315 Hz, 0 dB)



2. Adjust RV101 (L-CH), RV201 (R-CH) so that the VTVM reading is  $-20.5 \pm 0.5$  dB (0.07 V – 0.077 V).
3. Set the DOLBY switch to ON position. VTVM reading should be within 1.5 dB of that obtained in step 2.

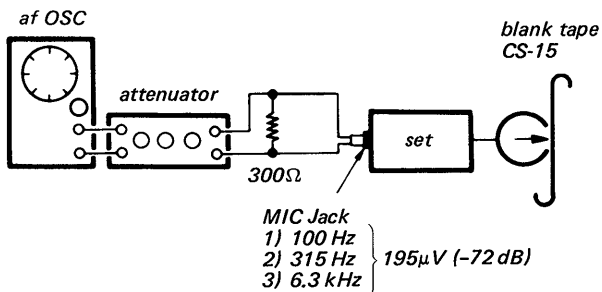
### Adjustment Location:



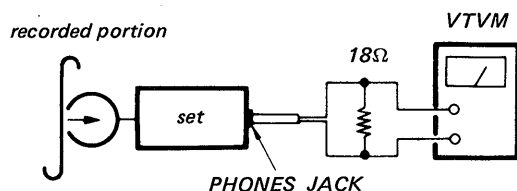
## Record Bias Adjustment

### Procedure:

1. Record mode

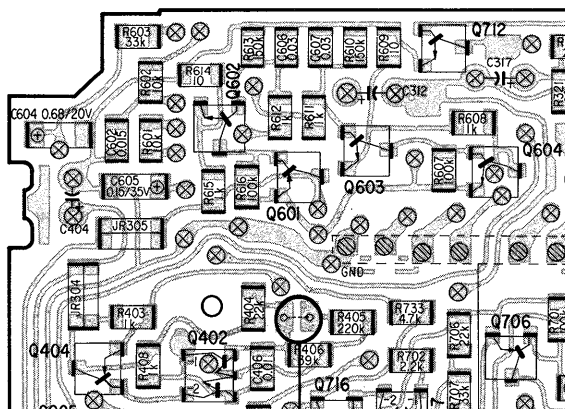


2. Playback mode



- a) Playback the 315 Hz portion and set VOL control so that the output level becomes in 24.5 mV (-30 dB).
- b) Playback the 100 Hz and 6.3 kHz portions in forward (FWD) direction. Output level should be 17.3 mV to 34.6 mV (-22 – -27 dB). If not, repeat above steps by connecting or disconnecting the adjustment pattern once in one step.

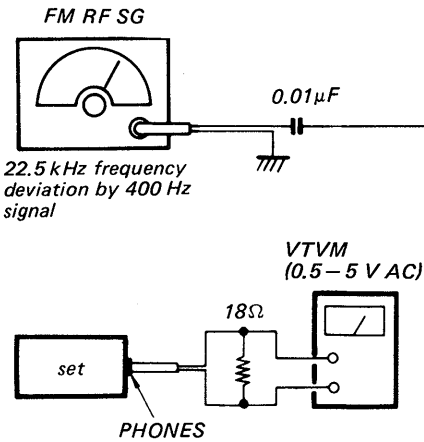
### Adjustment Location:



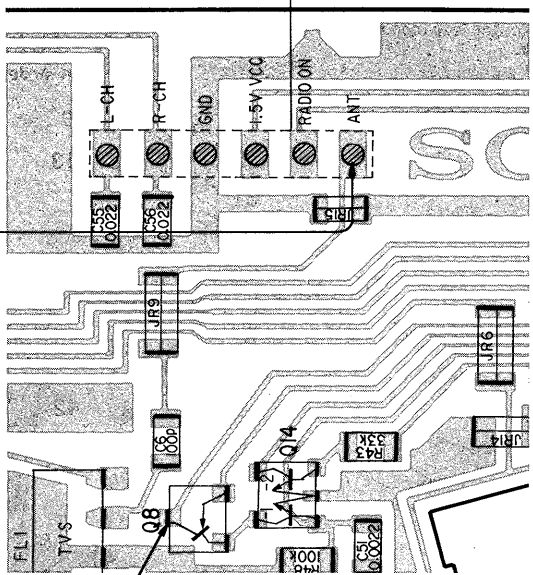
FM Section

Setting:

FUNCTION Selector: FM  
BAND Selector: FM



[RADIO BOARD]



collector of Q8

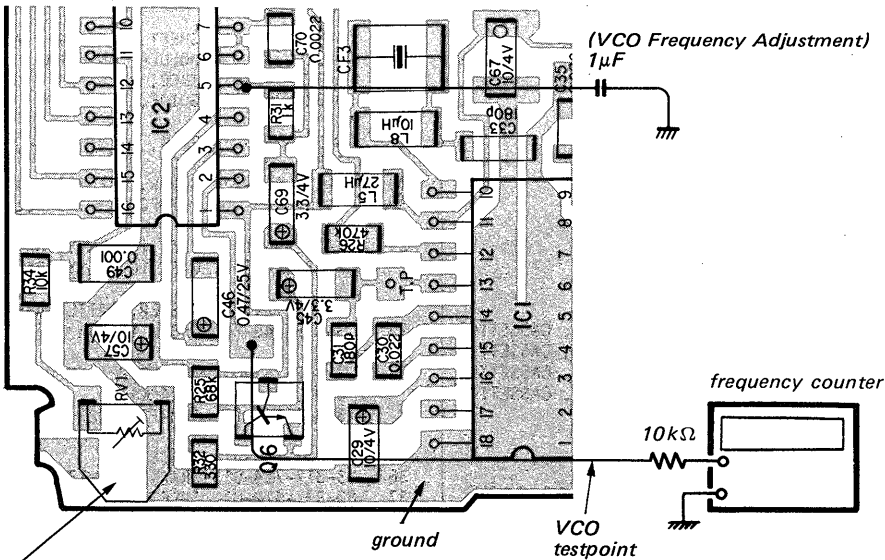
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

Regulator Output-voltage Adjustment

Procedure:

- Remove battery.
- Apply 1.2 V dc from external regulated DC power supply to the 1.5 V Vcc terminal.
- Adjust RV5 so that the output line (collector) of Q8 (pin 1 of IC2, etc.) becomes in 1.1 V.

[RADIO BOARD]



VCO Frequency Adjustment

Adjust RV1 for 19 kHz  $\pm 0.02$  kHz reading on the frequency counter.

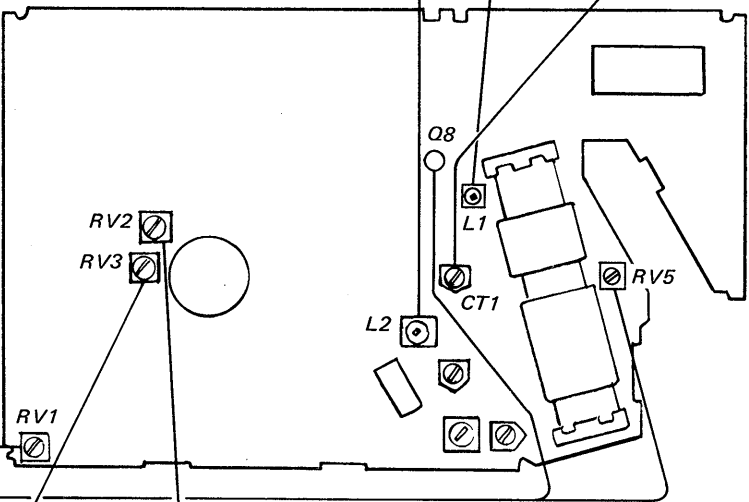
FM FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

Note: Perform this adjustment after the FM TUNING VOLTAGE ADJUSTMENT below.

Adjust for a maximum reading on VTVM.

| leftmost<br>(f min.)      | rightmost<br>(f max.)      | dial-pointer<br>position |
|---------------------------|----------------------------|--------------------------|
| 86.5 MHz<br>$\pm 0.3$ MHz | 109.5 MHz<br>$\pm 0.3$ MHz | SOG frequency            |
| L2                        | L1                         | CT1                      |
|                           |                            | adjustment parts         |

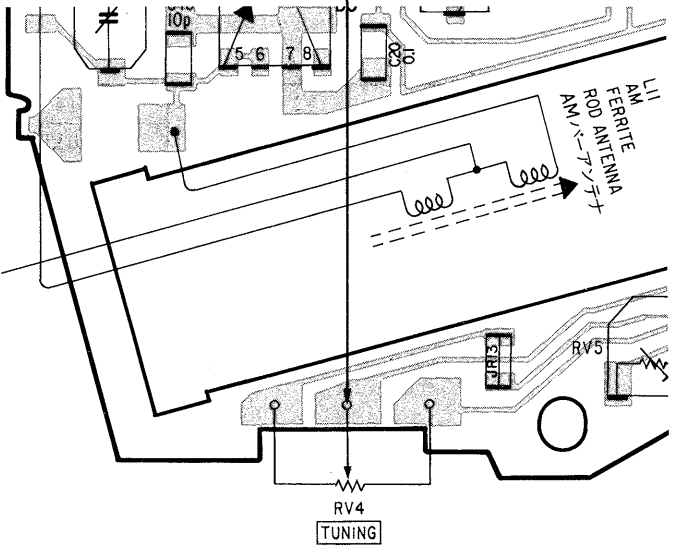
[RADIO BOARD]



| RV3                         | RV2                         |
|-----------------------------|-----------------------------|
| VOM 1V                      | VOM 9V                      |
| Minimum receiving frequency | Maximum receiving frequency |
| TUNING VOLTAGE ADJUSTMENT*  |                             |

\* FM frequency coverage adjustment and the tracking adjustment should be performed after the tuning voltage adjustment.

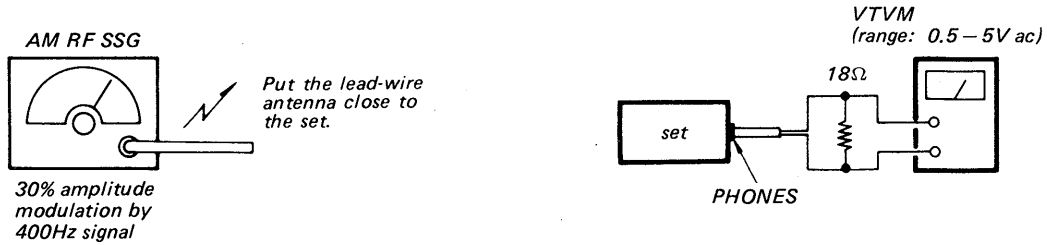
[RADIO BOARD]



## AM Section

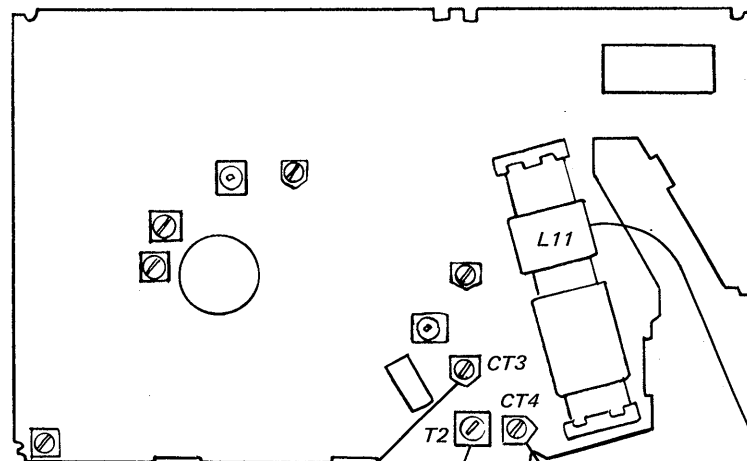
### Setting:

FUNCTION Selector: RADIO, DX  
BAND Selector: AM



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

### [RADIO BOARD]



| CT3                                   | T2                  |
|---------------------------------------|---------------------|
| 1,680 kHz $\pm$ 20 kHz                | 515 kHz $\pm$ 3 kHz |
| Adjust for a maximum reading on VTVM. |                     |
| AM FREQUENCY COVERAGE ADJUSTMENT      |                     |

| CT4                                   | L11     |
|---------------------------------------|---------|
| 1,400 kHz                             | 620 kHz |
| Adjust for a maximum reading on VTVM. |         |
| AM TRACKING ADJUSTMENT                |         |

## SECTION 4

### EXPLODED VIEWS AND PARTS LIST

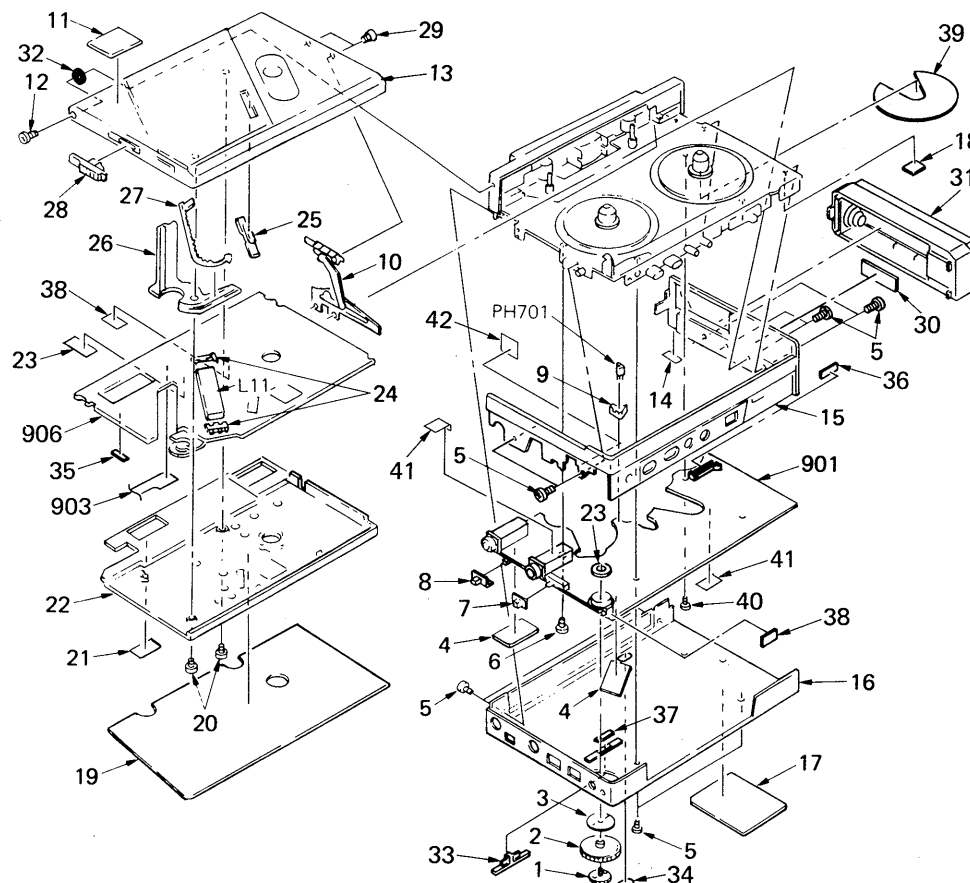
## NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a collation number in the remark column.

## 4-1.



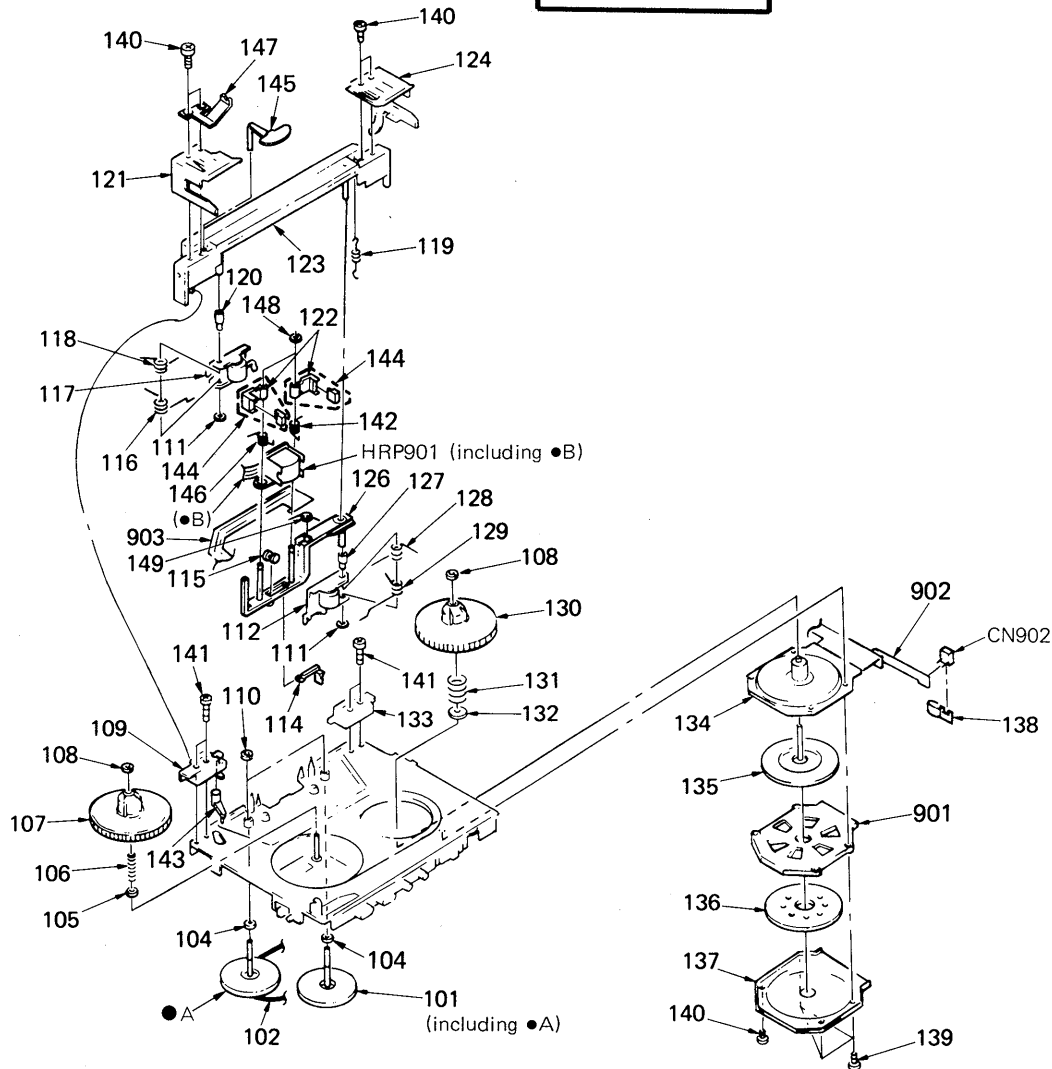
| No. | Part No.      | Description                                  | Remarks |
|-----|---------------|----------------------------------------------|---------|
| 1   | 3-333-145-01  | SCREW, VOL                                   |         |
| 2   | 3-333-142-01  | KNOB, VOL                                    |         |
| 3   | 3-315-467-00  | WASHER, CONTROL                              |         |
| 4   | 3-831-441-XX  | CUSHION, CABINET UPPER                       |         |
| 5   | 3-703-816-31  | SCREW (M1.4X1.6), SPECIAL HEAD               |         |
| 6   | 3-703-816-01  | SCREW (M1.4X2.0), SPECIAL HEAD               |         |
| 7   | 3-333-140-01  | KNOB, TAPE SW                                |         |
| 8   | 3-333-141-01  | KNOB, DOLBY SW                               |         |
| 9   | 3-329-761-01  | ADJUSTOR, REFLECTOR                          |         |
| 10  | X-3329-668-1  | GUIDE ASSY, ARM                              |         |
| 11  | 3-703-710-01  | STICKER, SONY SYMBOL (12)                    |         |
| 12  | 3-329-766-01  | SCREW (M1.4X2.95), STEP                      |         |
| 13  | X-3329-711-1  | (WM-F200:BLU)....PANEL(R)ASSY(BU), CASSETTE  |         |
|     | X-3329-712-1  | (WM-F202:SILVER)..PANEL(R)ASSY(SE), CASSETTE |         |
|     | X-3329-713-1  | (WM-F202:BLACK)...PANEL(R)ASSY(BE), CASSETTE |         |
|     | X-3329-714-1  | (WM-F202:RED).....PANEL(R)ASSY(RE), CASSETTE |         |
| 14  | 9-911-840-XX  | SHEET                                        |         |
| 15  | 3-333-149-01  | ORNAMENT (R), REEL                           |         |
| 16  | 3-333-138-01  | (WM-F202:SILVER)...PANEL (R), CONTROL        |         |
|     | 3-333-138-11  | (BLACK).....PANEL (R), CONTROL               |         |
|     | 3-333-138-21  | (WM-F202:RED).....PANEL (R), CONTROL         |         |
| 17  | 3-335-908-01  | (WM-F200:BLACK).....LABEL,MODEL NUMBER(U)    |         |
|     | 3-335-911-01  | (WM-F202:RED,SILVER)..LABEL,MODEL NUMBER(E)  |         |
|     | 3-335-911-11  | (WM-F202:BLACK).....LABEL,MODEL NUMBER(E)    |         |
| 18  | 3-327-119-01  | SHEET (B), INSULATING                        |         |
| 19  | ★3-331-021-01 | SHEET (A), BLIND                             |         |
| 20  | 3-703-816-32  | SCREW (M1.4X1.6), SPECIAL HEAD               |         |
| 21  | 3-331-021-01  | SHEET (B), BLIND                             |         |
| 22  | 3-329-758-01  | PLATE, BLIND, PANEL                          |         |

| No. | Part No.      | Description                            | Remarks |
|-----|---------------|----------------------------------------|---------|
| 23  | 3-330-442-01  | SHEET, ADHESIVE, VOL                   |         |
| 24  | 3-329-748-01  | HOLDER, ANTENNA                        |         |
| 25  | 3-329-747-01  | KNOB, BAND SW                          |         |
| 26  | 3-329-757-01  | GUIDE, POINTER                         |         |
| 27  | 3-329-753-01  | RACK, POINTER                          |         |
| 28  | 3-329-749-11  | KNOB, FUNCTION                         |         |
| 29  | 7-627-451-07  | SCREW, PRECISION +K 1.4X1.6            |         |
| 30  | *3-701-999-00 | (WM-F200)....LABEL, SERIAL NUMBER      |         |
| 31  | X-3329-691-1  | CASE (C) ASSY, BATTERY                 |         |
|     | X-3329-692-1  | CASE (C) ASSY, BATTERY (RECHARGEABLE)  |         |
| 32  | 3-563-124-11  | WASHER, RATTLE ABSORBER                |         |
| 33  | 3-333-143-01  | KNOB, ISS SW                           |         |
| 34  | 3-333-162-01  | (WM-F202:SILVER)...SHEET, AZIMUTH HOLE |         |
|     | 3-333-162-11  | (BLACK).....SHEET, AZIMUTH HOLE        |         |
|     | 3-333-162-21  | (WM-F202:RED).....SHEET, AZIMUTH HOLE  |         |
| 35  | 3-333-180-01  | SPACER                                 |         |
| 36  | *3-317-714-01 | BRACKET, SWITCH                        |         |
| 37  | *3-331-519-01 | SHEET (A)                              |         |
| 38  | 3-831-441-XX  | CUSHION                                |         |
| 39  | 3-333-163-01  | SHEET,INSULATING, SHIELD PLATE         |         |
| 40  | 3-333-181-01  | SCREW (M1.4X2.3), PRECISION STEP       |         |
| 41  | 3-703-929-01  | SPACER (P)                             |         |
| 42  | 9-911-838-XX  | CUSHION                                |         |
| 43  | 3-703-816-61  | SCREW (M1.4X2.2), SPECIAL HEAD         |         |
| 905 | A-3070-162-A  | PC BOARD ASSY, AU                      |         |
| 906 | A-3089-201-A  | (WM-F202)...PC BOARD ASSY, TUNER       |         |
|     | A-3089-203-A  | (WM-F200)...PC BOARD ASSY, TUNER       |         |

# REVISED

# WM-F200/F202

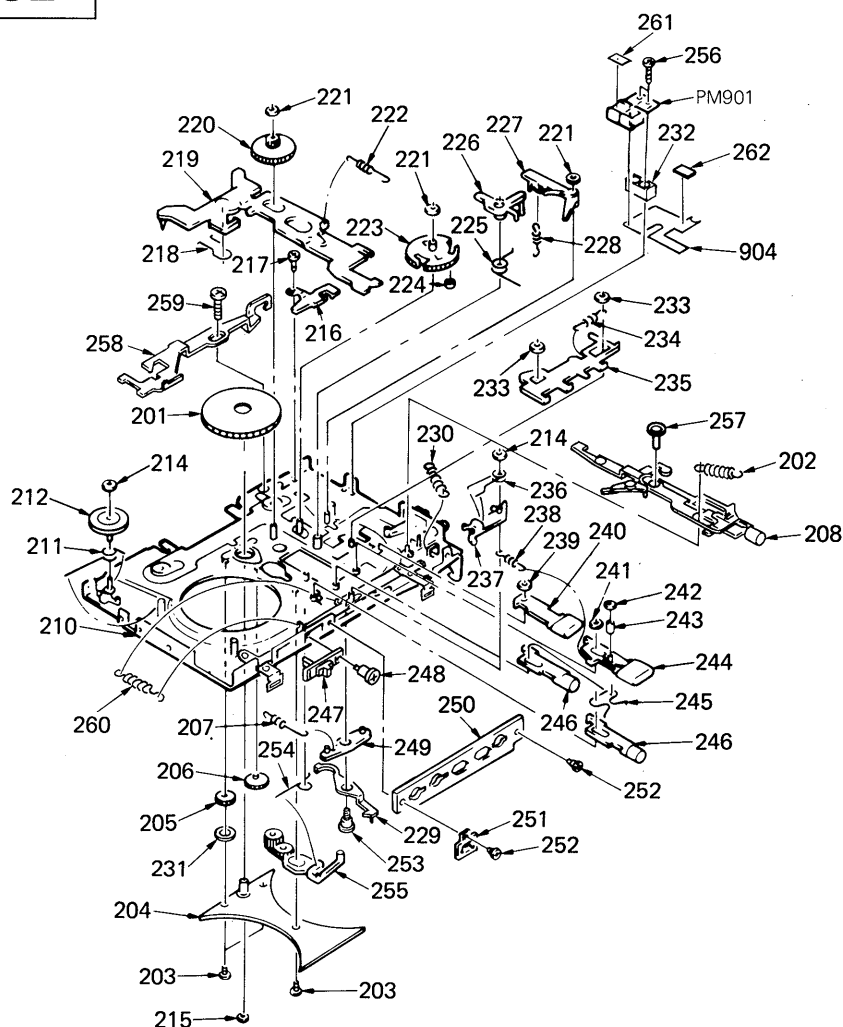
4-2.



| No. | Part No.     | Description               | Remarks |
|-----|--------------|---------------------------|---------|
| 101 | X-3329-707-1 | FLYWHEEL (R) ASSY         |         |
| 102 | 3-329-695-01 | BELT                      |         |
| 103 | 3-331-093-01 | SPRING COMPRESSION        |         |
| 104 | 3-321-394-21 | WASHER (t=0.2)            |         |
| 105 | 3-315-415-21 | WASHER (1.5-2.3)          |         |
| 106 | 3-331-013-01 | SPRING, COMPRESSION       |         |
| 107 | X-3329-705-1 | GEAR (R) ASSY, T REEL     |         |
| 108 | 3-315-384-11 | WASHER, STOPPER           |         |
| 109 | 3-329-736-01 | GUIDE (RIGHT), HOLDER     |         |
| 110 | 3-331-007-01 | WASHER (t=0.25)           |         |
| 111 | 3-331-036-01 | WASHER (t=0.25)           |         |
|     | 3-331-036-11 | WASHER (t=0.19)           |         |
| 112 | X-3329-697-1 | PINCH LEVER (R) ASSY      |         |
| 113 | 3-331-097-01 | SCREW, AZIMUTH            |         |
| 114 | 3-333-101-01 | LEVER, AZIMUTH            |         |
| 115 | 3-333-102-01 | SHAFT, AZIMUTH            |         |
|     | 3-333-102-21 | SHAFT, AZIMUTH            |         |
| 116 | 3-329-640-01 | SPRING, PINCH (N)(85+3g)  |         |
|     | 3-329-640-11 | SPRING, PINCH (N)(92+3g)  |         |
|     | 3-329-640-21 | SPRING, PINCH (N)(100+3g) |         |
| 117 | X-3329-698-1 | PINCH LEVER (N) ASSY      |         |
| 118 | 3-329-642-01 | SPRING, PINCH (N)         |         |
| 119 | 3-331-012-01 | SPRING (HOLDER), TENSION  |         |
| 120 | 3-329-637-01 | COLLAR, PINCH LEVER       |         |
| 121 | 3-329-713-01 | HOLDER (LEFT), CASSETTE   |         |
| 123 | X-3329-708-1 | HOLDER (TD) ASSY          |         |
| 124 | 3-329-714-01 | HOLDER (RIGHT), CASSETTE  |         |
| 125 | 3-331-038-01 | SPRING COMPRESSION        |         |
| 126 | X-3329-683-1 | LEVER ASSY, HEAD          |         |
| 127 | 3-331-027-01 | COLLAR (R), PINCH LEVER   |         |
| 128 | 3-329-643-01 | SPRING, PINCH LEVER (R)   |         |

| No.    | Part No.      | Description                    | Remarks |
|--------|---------------|--------------------------------|---------|
| 129    | 3-329-641-01  | SPRING, PINCH (R)(77+3g)       |         |
|        | 3-329-641-11  | SPRING, PINCH (R)(85+3g)       |         |
|        | 3-329-641-21  | SPRING, PINCH (R)(93+3g)       |         |
| 130    | 3-329-729-01  | GEAR, SUPPLY REEL              |         |
| 131    | 3-331-014-01  | SPRING, COMPRESSION            |         |
| 132    | 3-320-354-01  | WASHER                         |         |
| 133    | 3-329-737-01  | GUIDE (LEFT), HOLDER           |         |
| 134    | X-3329-625-1  | CHASSIS ASSY, MOTOR            |         |
| 135    | A-3133-236-A  | WHEEL BLOCK ASSY, MOTOR        |         |
| 136    | 3-329-649-01  | PLATE, HYSTERESIS              |         |
| 137    | *3-333-126-01 | PLATE (R), SHIELD, MOTOR       |         |
| 138    | 3-329-774-01  | SPRING, CONTACT                |         |
| 139    | 3-703-816-91  | SCREW (M1.4X2.8), SPECIAL HEAD |         |
| 140    | 7-627-551-98  | PRECISION SCREW +P 1.4X2.2     |         |
| 141    | 7-627-552-48  | SCREW, PRECISION +P 1.7X4      |         |
| 142    | 3-333-105-01  | SPRING (B)(AZIMUTH)            |         |
|        | 3-333-105-11  | SPRING (B)                     |         |
| 143    | 3-329-690-01  | GUIDE, MARKER                  |         |
| 144    | A-3164-345-A  | LEVER BLOCK ASSY, ERASE        |         |
| 145    | 3-333-108-01  | LEVER, INDICATION              |         |
| 146    | 3-333-104-01  | SPRING (A)                     |         |
|        | 3-333-104-11  | SPRING (A)(AZIMUTH)            |         |
| 147    | 3-333-107-01  | SPRING                         |         |
| 148    | 3-335-902-01  | WASHER                         |         |
| 149    | 3-333-123-01  | SPRING, HEAD LEVER             |         |
| 901    | 1-462-230-11  | COIL, MOTOR (STATOR)           |         |
| 902    | 1-618-639-11  | PC BOARD, MOTOR CONNECTION     |         |
| CN101  | 1-506-573-12  | CONNECTOR 2P                   |         |
| HRP901 | 1-543-308-11  | HEAD, MAGNETIC (REC/PB)        |         |

4-3.



| No. | Part No.      | Description                     | Remarks | No.   | Part No.      | Description                    | Remarks |
|-----|---------------|---------------------------------|---------|-------|---------------|--------------------------------|---------|
| 201 | X-3329-628-1  | PULLEY COMPLETE ASSY, MIDWAY    |         | 233   | 3-578-224-00  | WASHER                         |         |
| 202 | 3-333-106-01  | SPRING                          |         | 234   | 3-331-009-01  | SPRING (LOCK LEVER), TENSION   |         |
| 203 | 3-331-047-01  | SCREW (M1.4X1.4), SPECIAL HEAD  |         | 235   | 3-329-731-01  | LEVER, LOCK                    |         |
| 204 | X-3329-618-1  | COVER ASSY, REEL                |         | 236   | 3-329-702-01  | SPRING                         |         |
| 205 | 3-329-689-01  | GEAR (B), T                     |         | 237   | 3-329-692-05  | LEVER, SW                      |         |
| 206 | 3-329-688-01  | GEAR (A), T                     |         | 238   | 3-331-010-01  | SPRING (STOP LEVER), TENSION   |         |
| 208 | X-3329-627-1  | LEVER (A) ASSY, REC             |         | 239   | 3-578-242-21  | WASHER                         |         |
| 210 | X-3329-629-1  | CHASSIS COMPLETE (R) ASSY       |         | 240   | X-3329-620-1  | LEVER ASSY, PLAY               |         |
| 211 | 3-329-701-01  | SPRING                          |         | 241   | 3-578-224-11  | WASHER                         |         |
| 212 | 3-329-686-01  | WHEEL, REVERSE                  |         | 242   | 3-315-414-00  | WASHER                         |         |
| 213 | 3-311-815-21  | WASHER, POLYETHYLENE            |         | 243   | 3-331-045-41  | COLLAR, PANEL LOCK             |         |
| 214 | 3-331-036-01  | WASHER (t=0.25)                 |         | 244   | X-3329-636-1  | LEVER ASSY, STOP               |         |
|     | 3-331-036-11  | WASHER (t=0.19)                 |         | 245   | 3-331-016-01  | SPRING                         |         |
| 215 | 3-331-007-01  | WASHER (t=0.25)                 |         | 246   | X-3329-621-1  | LEVER (A) ASSY, F.R            |         |
| 216 | 3-329-685-01  | SPRING (A)                      |         | 247   | 3-333-115-01  | KNOB, SAFETY LOCK              |         |
| 217 | 3-331-008-01  | PRECISION SCREW, +P 1.4X1.1     |         | 248   | 3-329-697-01  | SCREW, STEP, PRECISION         |         |
| 218 | 3-329-698-01  | SPRING (B)                      |         | 249   | X-3329-617-1  | LEVER (B) ASSY, DRIVING        |         |
| 219 | X-3329-699-1  | LEVER (AD) ASSY, DRIVING        |         | 250   | *3-329-734-01 | HOLDER, BUTTON                 |         |
| 220 | 3-329-687-01  | GEAR, DRIVING                   |         | 251   | 3-331-043-01  | SPRING                         |         |
| 221 | 3-315-384-11  | WASHER, STOPPER                 |         | 252   | 3-703-816-32  | SCREW (M1.4X1.6), SPECIAL HEAD |         |
| 222 | 3-331-018-01  | SPRING, TENSION                 |         | 253   | 3-331-056-01  | SHAFT, DRIVING LEVER (B)       |         |
| 223 | 3-329-730-01  | GEAR, CAM                       |         | 254   | 3-329-699-01  | SPRING                         |         |
| 224 | 3-329-693-01  | COLLAR, CAM GEAR                |         | 255   | X-3329-626-1  | LEVER (B) ASSY, F.R            |         |
| 225 | 3-329-700-01  | SPRING                          |         | 256   | 7-627-551-37  | SCREW, PRECISION +P 1.4X5      |         |
| 226 | 3-329-733-01  | LEVER (A), SHUT-OFF             |         | 257   | 3-333-182-01  | SHAFT, REC LEVER (C)           |         |
| 227 | X-3329-615-1  | LEVER ASSY, TRIGGER             |         | 258   | X-3329-682-1  | LEVER (A) ASSY, ERASE          |         |
| 228 | 3-331-011-01  | SPRING (TRIGGER LEVER), TENSION |         | 259   | 3-329-696-01  | SCREW, ERASE LEVER             |         |
| 229 | 3-329-684-01  | LEVER (A), SELECT               |         | 260   | 3-335-931-01  | SPRING (SELECT LEVER), TENSION |         |
| 230 | 3-331-083-01  | SPRING, TENSION                 |         | 261   | 3-333-180-01  | SPACER                         |         |
| 231 | 3-331-081-01  | WASHER                          |         | 262   | 3-335-906-01  | ADHESIVE TAPE, DOUBLE-SIDED    |         |
| 232 | *3-331-041-01 | BRACKET, P                      |         | PM901 | 1-454-406-11  | SOLENOID, PLUNGER (DIRECTION)  |         |

SECTION 5  
ELECTRICAL PARTS LIST

## NOTE:

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

MF:μF, PF:μF.

## RESISTORS

- All resistors are in ohms.
- F: nonflammable

## COILS

- MMH: mH, UH: μH

## SEMICONDUCTORS

In each case, U: μ, for example:

 UA...: μA..., UPA...: μPA..., UPC...: μPC,  
 UPD...: μPD...

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description                      |        |     |  |
|---------|--------------|----------------------------------|--------|-----|--|
| 901     | 1-462-230-11 | COIL, MOTOR (STATOR)             |        |     |  |
| 902     | 1-618-639-11 | PC BOARD, MOTOR CONNECTION       |        |     |  |
| 903     | 1-618-640-11 | PC BOARD, RADIO CONNECTION       |        |     |  |
| 904     | 1-618-641-11 | PC BOARD, MP FLEXIBLE            |        |     |  |
| 905     | A-3070-162-A | PC BOARD ASSY, AU                |        |     |  |
| 906     | A-3089-201-A | (WM-F202)...PC BOARD ASSY, TUNER |        |     |  |
|         | A-3089-203-A | (WM-F200)...PC BOARD ASSY, TUNER |        |     |  |
| C1      | 1-163-013-00 | CERAMIC CHIP 0.0022MF            | 10%    | 50V |  |
| C2      | 1-163-013-00 | CERAMIC CHIP 0.0022MF            | 10%    | 50V |  |
| C3      | 1-163-125-00 | CERAMIC CHIP 220PF               | 5%     | 50V |  |
| C4      | 1-163-101-00 | CERAMIC CHIP 22PF                | 5%     | 50V |  |
| C5      | 1-163-088-00 | CERAMIC CHIP 5PF                 | 0.25PF | 50V |  |
| C6      | 1-163-117-00 | CERAMIC CHIP 100PF               | 5%     | 50V |  |
| C7      | 1-163-013-00 | CERAMIC CHIP 0.0022MF            | 10%    | 50V |  |
| C8      | 1-163-090-00 | CERAMIC CHIP 7PF                 | 0.25PF | 50V |  |
| C9      | 1-163-085-00 | CERAMIC CHIP 2PF                 | 0.25PF | 50V |  |
| C10     | 1-163-116-00 | CERAMIC CHIP 91PF                | 5%     | 50V |  |
| C11     | 1-163-117-00 | CERAMIC CHIP 100PF               | 5%     | 50V |  |
| C12     | 1-163-117-00 | CERAMIC CHIP 100PF               | 5%     | 50V |  |
| C13     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C14     | 1-163-038-00 | CERAMIC CHIP 0.1MF               |        | 25V |  |
| C15     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C20     | 1-163-038-00 | CERAMIC CHIP 0.1MF               |        | 25V |  |
| C25     | 1-135-104-00 | TANTAL. CHIP 10MF                | 10%    | 4V  |  |
| C28     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C29     | 1-135-104-00 | TANTAL. CHIP 10MF                | 10%    | 4V  |  |
| C30     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C31     | 1-163-257-00 | CERAMIC CHIP 180PF               | 5%     | 50V |  |
| C32     | 1-163-081-00 | CERAMIC CHIP 0.22MF              |        | 25V |  |
| C33     | 1-163-257-00 | CERAMIC CHIP 180PF               | 5%     | 50V |  |
| C34     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C35     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C36     | 1-135-104-00 | TANTAL. CHIP 10MF                | 10%    | 4V  |  |
| C37     | 1-163-101-00 | CERAMIC CHIP 22PF                | 5%     | 50V |  |
| C38     | 1-163-267-00 | CERAMIC CHIP 470PF               | 5%     | 50V |  |
| C39     | 1-163-038-00 | CERAMIC CHIP 0.1MF               |        | 25V |  |
| C40     | 1-163-093-00 | CERAMIC CHIP 10PF                | 5%     | 50V |  |
| C41     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C42     | 1-135-104-00 | TANTAL. CHIP 10MF                | 10%    | 4V  |  |
| C43     | 1-163-033-00 | CERAMIC CHIP 0.022MF             | 10%    | 25V |  |
| C44     | 1-163-257-00 | CERAMIC CHIP 180PF               | 5%     | 50V |  |
| C45     | 1-135-103-00 | TANTAL. CHIP 3.3MF               | 10%    | 4V  |  |
| C46     | 1-135-083-00 | TANTAL. CHIP 0.47MF              | 10%    | 25V |  |
| C47     | 1-135-072-21 | TANTAL. CHIP 0.22MF              | 10%    | 35V |  |
| C48     | 1-135-083-00 | TANTAL. CHIP 0.47MF              | 10%    | 25V |  |
| C49     | 1-163-335-11 | CERAMIC CHIP 0.001MF             | 5%     | 50V |  |

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description              |         |      |     |
|---------|--------------|--------------------------|---------|------|-----|
| C50     | 1-163-117-00 | CERAMIC CHIP 100PF       | 5%      | 50V  |     |
| C51     | 1-163-013-00 | CERAMIC CHIP 0.0022MF    | 10%     | 50V  |     |
| C52     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C53     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C54     | 1-163-033-00 | (WM-F200)...CERAMIC CHIP | 0.022MF | 10%  | 25V |
| C55     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C56     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C57     | 1-135-104-00 | TANTAL. CHIP 10MF        | 10%     | 4V   |     |
| C58     | 1-135-103-00 | TANTAL. CHIP 3.3MF       | 10%     | 4V   |     |
| C59     | 1-135-103-00 | TANTAL. CHIP 3.3MF       | 10%     | 4V   |     |
| C60     | 1-163-125-00 | (WM-F200)...CERAMIC CHIP | 220PF   | 5%   | 50V |
| C61     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C62     | 1-135-104-00 | TANTAL. CHIP 10MF        | 10%     | 4V   |     |
| C63     | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C64     | 1-135-096-21 | TANTAL. CHIP 4.7MF       | 10%     | 10V  |     |
| C65     | 1-135-096-21 | TANTAL. CHIP 4.7MF       | 10%     | 10V  |     |
| C66     | 1-163-038-00 | CERAMIC CHIP 0.1MF       |         | 25V  |     |
| C67     | 1-135-104-00 | TANTAL. CHIP 10MF        | 10%     | 4V   |     |
| C68     | 1-163-141-00 | CERAMIC CHIP 0.001MF     | 10%     | 50V  |     |
| C69     | 1-135-103-00 | TANTAL. CHIP 3.3MF       | 10%     | 4V   |     |
| C70     | 1-163-013-00 | CERAMIC CHIP 0.0022MF    | 10%     | 50V  |     |
| C71     | 1-163-093-00 | CERAMIC CHIP 10PF        | 5%      | 50V  |     |
| C72     | 1-163-137-00 | (WM-F200)...CERAMIC CHIP | 680PF   | 5%   | 50V |
| C102    | 1-135-091-00 | TANTAL. CHIP 1MF         | 20%     | 16V  |     |
| C104    | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C105    | 1-163-810-00 | CERAMIC CHIP 0.03MF      | 10%     | 25V  |     |
| C106    | 1-163-015-00 | CERAMIC CHIP 0.0033MF    | 10%     | 50V  |     |
| C108    | 1-135-105-00 | TANTAL. CHIP 33MF        | 20%     | 4V   |     |
| C109    | 1-163-038-00 | CERAMIC CHIP 0.1MF       |         | 25V  |     |
| C110    | 1-163-015-00 | CERAMIC CHIP 0.0033MF    | 10%     | 50V  |     |
| C111    | 1-135-103-00 | TANTAL. CHIP 3.3MF       | 20%     | 4V   |     |
| C112    | 1-163-019-00 | CERAMIC CHIP 0.0068MF    | 10%     | 50V  |     |
| C115    | 1-135-087-21 | TANTAL. CHIP 0.68MF      | 10%     | 20V  |     |
| C116    | 1-163-017-00 | CERAMIC CHIP 0.0047MF    | 5%      | 50V  |     |
| C117    | 1-135-091-00 | TANTAL. CHIP 1MF         | 20%     | 16V  |     |
| C119    | 1-135-091-00 | TANTAL. CHIP 1MF         | 20%     | 16V  |     |
| C120    | 1-163-013-00 | CERAMIC CHIP 0.0022MF    | 10%     | 50V  |     |
| C121    | 1-163-038-00 | CERAMIC CHIP 0.1MF       |         | 25V  |     |
| C122    | 1-124-947-11 | ELECT 220MF              | 20%     | 1.5V |     |
| C202    | 1-135-091-00 | TANTAL. CHIP 1MF         | 20%     | 16V  |     |
| C204    | 1-163-033-00 | CERAMIC CHIP 0.022MF     | 10%     | 25V  |     |
| C205    | 1-163-810-00 | CERAMIC CHIP 0.03MF      | 10%     | 25V  |     |
| C206    | 1-163-015-00 | CERAMIC CHIP 0.0033MF    | 10%     | 50V  |     |
| C208    | 1-135-105-00 | TANTAL. CHIP 33MF        | 20%     | 4V   |     |
| C209    | 1-163-038-00 | CERAMIC CHIP 0.1MF       |         | 25V  |     |

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description           |     |      |  |
|---------|--------------|-----------------------|-----|------|--|
| C210    | 1-163-015-00 | CERAMIC CHIP 0.0033MF | 10% | 50V  |  |
| C211    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C212    | 1-163-019-00 | CERAMIC CHIP 0.0068MF | 10% | 50V  |  |
| C213    | 1-163-074-00 | CERAMIC CHIP 0.033MF  | 5%  | 25V  |  |
| C216    | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 5%  | 50V  |  |
| C217    | 1-135-091-00 | TANTAL. CHIP 1MF      | 20% | 16V  |  |
| C219    | 1-135-091-00 | TANTAL. CHIP 1MF      | 20% | 16V  |  |
| C220    | 1-163-013-00 | CERAMIC CHIP 0.0022MF | 10% | 50V  |  |
| C221    | 1-163-038-00 | CERAMIC CHIP 0.1MF    |     | 25V  |  |
| C222    | 1-124-947-11 | ELECT 220MF           | 20% | 1.5V |  |
| C302    | 1-124-434-00 | ELECT 220MF           | 20% | 4V   |  |
| C303    | 1-124-434-00 | ELECT 220MF           | 20% | 4V   |  |
| C304    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C305    | 1-124-947-11 | ELECT 220MF           | 20% | 1.5V |  |
| C306    | 1-124-431-00 | ELECT 33MF            | 20% | 4V   |  |
| C307    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C308    | 1-124-947-11 | ELECT 220MF           | 20% | 1.5V |  |
| C309    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C310    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C311    | 1-163-038-00 | CERAMIC CHIP 0.1MF    |     | 25V  |  |
| C312    | 1-124-434-00 | ELECT 220MF           | 20% | 4V   |  |
| C313    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C314    | 1-163-038-00 | CERAMIC CHIP 0.1MF    |     | 25V  |  |
| C315    | 1-135-091-00 | TANTAL. CHIP 1MF      | 20% | 16V  |  |
| C316    | 1-163-038-00 | CERAMIC CHIP 0.1MF    |     | 25V  |  |
| C317    | 1-124-434-00 | ELECT 220MF           | 20% | 4V   |  |
| C318    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C401    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C402    | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V  |  |
| C403    | 1-135-105-00 | TANTAL. CHIP 33MF     | 20% | 4V   |  |
| C404    | 1-124-947-11 | ELECT 220MF           | 20% | 1.5V |  |
| C406    | 1-163-021-00 | CERAMIC CHIP 0.01MF   | 10% | 50V  |  |
| C407    | 1-163-127-00 | CERAMIC CHIP 270PF    | 5%  | 50V  |  |
| C408    | 1-163-132-00 | CERAMIC CHIP 430PF    | 5%  | 50V  |  |
| C409    | 1-162-625-11 | CERAMIC CHIP 0.0047MF | 5%  | 50V  |  |
| C410    | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V  |  |
| C601    | 1-135-070-00 | TANTAL. CHIP 0.1MF    | 10% | 35V  |  |
| C602    | 1-163-023-00 | CERAMIC CHIP 0.015MF  | 10% | 50V  |  |
| C603    | 1-135-070-00 | TANTAL. CHIP 0.1MF    | 10% | 35V  |  |
| C604    | 1-135-087-21 | TANTAL. CHIP 0.68MF   | 10% | 20V  |  |
| C605    | 1-135-071-21 | TANTAL. CHIP 0.15MF   | 10% | 35V  |  |
| C606    | 1-163-810-00 | CERAMIC CHIP 0.03MF   | 10% | 25V  |  |
| C607    | 1-163-810-00 | CERAMIC CHIP 0.03MF   | 10% | 25V  |  |
| C701    | 1-163-081-00 | CERAMIC CHIP 0.22MF   |     | 25V  |  |
| C702    | 1-135-087-21 | TANTAL. CHIP 0.68MF   | 10% | 20V  |  |
| C703    | 1-163-081-00 | CERAMIC CHIP 0.22MF   |     | 25V  |  |
| C704    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C705    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C706    | 1-135-099-00 | TANTAL. CHIP 2.2MF    | 20% | 6.3V |  |
| C707    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C708    | 1-135-091-00 | TANTAL. CHIP 1MF      | 20% | 16V  |  |
| C709    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C710    | 1-163-021-00 | CERAMIC CHIP 0.01MF   | 10% | 50V  |  |
| C801    | 1-135-103-00 | TANTAL. CHIP 3.3MF    | 20% | 4V   |  |
| C802    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |
| C803    | 1-163-021-00 | CERAMIC CHIP 0.01MF   | 10% | 50V  |  |
| C804    | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V  |  |
| C805    | 1-135-104-00 | TANTAL. CHIP 10MF     | 20% | 4V   |  |

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description                                                |   |    |       |
|---------|--------------|------------------------------------------------------------|---|----|-------|
| CF1     | 1-567-338-65 | FILTER, CERAMIC                                            |   |    |       |
| CF2     | 1-567-338-65 | FILTER, CERAMIC                                            |   |    |       |
| CF3     | 1-567-338-65 | FILTER, CERAMIC                                            |   |    |       |
| CN101   | 1-506-573-12 | CONNECTOR 2P                                               |   |    |       |
| CT1     | 1-141-333-11 | CAP, VAR, TRIMMER                                          |   |    |       |
| CT3     | 1-141-333-11 | CAP, VAR, TRIMMER                                          |   |    |       |
| CT4     | 1-141-333-11 | CAP, VAR, TRIMMER                                          |   |    |       |
| D1      | 8-719-908-57 | DIODE SVC203                                               |   |    |       |
| D2      | 8-719-908-57 | DIODE SVC203                                               |   |    |       |
| D5      | 8-719-928-03 | DIODE KV1260M                                              |   |    |       |
| D8      | 8-719-106-53 | DIODE RD10M-B3                                             |   |    |       |
| D9      | 8-719-100-05 | DIODE 1S2837                                               |   |    |       |
| D10     | 8-719-101-23 | DIODE 1SS123                                               |   |    |       |
| D11     | 8-719-101-23 | DIODE 1SS123                                               |   |    |       |
| D301    | 8-719-908-30 | DIODE DA106K                                               |   |    |       |
| D302    | 1-807-305-11 | DIODE GL2PR9 (LED)(TAPE OPR)                               |   |    |       |
| D401    | 8-719-118-21 | DIODE 1SS283-T2                                            |   |    |       |
| D801    | 8-719-105-57 | DIODE RD3.9M-T1B2                                          |   |    |       |
| FL1     | 1-235-279-00 | FILTER, BAND PASS                                          |   |    |       |
| HRP901  | 1-543-308-11 | HEAD, MAGNETIC (REC/PB)<br>(INCLUDING HEAD FLEXIBLE BOARD) |   |    |       |
| IC1     | 8-759-923-96 | IC CX10053B                                                |   |    |       |
| IC2     | 8-759-910-53 | IC CX10054                                                 |   |    |       |
| IC301   | 8-752-030-34 | IC CXA1010M                                                |   |    |       |
| IC302   | 8-759-701-07 | IC NJM2063AM                                               |   |    |       |
| IC303   | 8-759-602-12 | IC CX20089A                                                |   |    |       |
| IC601   | 8-752-012-32 | IC CX20123                                                 |   |    |       |
| J301    | 1-562-975-21 | JACK (MIC)                                                 |   |    |       |
| J302    | 1-562-975-11 | JACK (PHONES)                                              |   |    |       |
| JR1     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR2     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR3     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR4     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR5     | 1-216-296-00 | (WM-F202)...METAL CHIP                                     | 0 | 5% | 1/8W  |
| JR7     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR8     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR9     | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR11    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR12    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR13    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR15    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR16    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR17    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR18    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR20    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR21    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR22    | 1-216-295-00 | METAL CHIP                                                 | 0 | 5% | 1/10W |
| JR24    | 1-216-295-00 | (WM-F200)...METAL CHIP                                     | 0 | 5% | 1/10W |
| JR25    | 1-216-296-00 | (WM-F200)...METAL CHIP                                     | 0 | 5% | 1/8W  |
| JR26    | 1-216-295-00 | (WM-F200)...METAL CHIP                                     | 0 | 5% | 1/10W |
| JR27    | 1-216-295-00 | (WM-F200)...METAL CHIP                                     | 0 | 5% | 1/10W |
| JR28    | 1-216-296-00 | (WM-F200)...METAL CHIP                                     | 0 | 5% | 1/8W  |
| JR301   | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |
| JR302   | 1-216-296-00 | METAL CHIP                                                 | 0 | 5% | 1/8W  |

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## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description                   |
|---------|--------------|-------------------------------|
| JR303   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR304   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR305   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR306   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR307   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR308   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR309   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR310   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR311   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR312   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR313   | 1-216-296-00 | METAL CHIP 0 5% 1/8W          |
| JR314   | 1-216-295-00 | METAL CHIP 0 5% 1/10W         |
| JR315   | 1-216-295-00 | METAL CHIP 0 5% 1/10W         |
| JR317   | 1-216-295-00 | METAL CHIP 0 5% 1/10W         |
| JR318   | 1-216-295-00 | METAL CHIP 0 5% 1/10W         |
| JR319   | 1-216-295-00 | METAL CHIP 0 5% 1/10W         |
| L1      | 1-459-641-11 | COIL (WITH CORE)              |
| L2      | 1-459-589-11 | COIL (WITH CORE)              |
| L5      | 1-410-209-51 | INDUCTOR CHIP 27UH            |
| L6      | 1-410-196-11 | INDUCTOR CHIP 2.2UH           |
| L7      | 1-410-196-11 | INDUCTOR CHIP 2.2UH           |
| L8      | 1-410-204-41 | INDUCTOR CHIP 10UH            |
| L11     | 1-402-182-11 | ANTENNA, FERRITE-ROD (MW)     |
| L101    | 1-410-204-41 | INDUCTOR CHIP 10UH            |
| L201    | 1-410-204-41 | INDUCTOR CHIP 10UH            |
| L301    | 1-410-204-41 | INDUCTOR CHIP 10UH            |
| L401    | 1-410-213-51 | INDUCTOR CHIP 56UH            |
| L801    | 1-410-213-51 | INDUCTOR CHIP 56UH            |
| MF1     | 1-527-383-00 | FILTER, MECHANICAL            |
| PH701   | 8-719-751-43 | DIODE NJL5141E-AB             |
| PM901   | 1-454-406-11 | SOLENOID, PLUNGER (DIRECTION) |
| Q1      | 8-729-200-87 | TRANSISTOR 2SC2714Y           |
| Q2      | 8-729-175-73 | TRANSISTOR 2SC2757            |
| Q3      | 8-729-102-08 | TRANSISTOR 2SC2223-F14        |
| Q6      | 8-729-102-08 | TRANSISTOR 2SC2223-F14        |
| Q8      | 8-729-162-44 | TRANSISTOR 2SB624-BV4         |
| Q9      | 8-729-903-10 | TRANSISTOR FMW1               |
| Q10     | 8-729-159-64 | TRANSISTOR 2SD596             |
| Q11     | 8-729-100-66 | TRANSISTOR 2SC1623            |
| Q12     | 8-729-100-76 | TRANSISTOR 2SA812             |
| Q14     | 8-729-903-10 | TRANSISTOR FMW1               |
| Q15     | 8-729-902-96 | TRANSISTOR FMS1               |
| Q16     | 8-729-100-66 | TRANSISTOR 2SC1623            |
| Q301    | 8-729-900-51 | TRANSISTOR DTA114TK           |
| Q302    | 8-729-903-10 | TRANSISTOR FMW1               |
| Q303    | 8-729-903-10 | TRANSISTOR FMW1               |
| Q304    | 8-729-902-93 | TRANSISTOR FMG4               |
| Q305    | 8-729-901-46 | TRANSISTOR DTA114YK           |
| Q306    | 8-729-902-93 | TRANSISTOR FMG4               |
| Q307    | 8-729-902-93 | TRANSISTOR FMG4               |
| Q308    | 8-729-902-93 | TRANSISTOR FMG4               |
| Q309    | 8-729-100-76 | TRANSISTOR 2SA812             |
| Q310    | 8-729-902-99 | TRANSISTOR DTC114TK           |
| Q311    | 8-729-900-51 | TRANSISTOR DTA114TK           |
| Q401    | 8-729-159-64 | TRANSISTOR 2SD596             |
| Q402    | 8-729-903-10 | TRANSISTOR FMW1               |

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description                          |
|---------|--------------|--------------------------------------|
| Q404    | 8-729-162-44 | TRANSISTOR 2SB624-BV4                |
| Q601    | 8-729-162-44 | TRANSISTOR 2SB624-BV4                |
| Q602    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q603    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q604    | 8-729-162-44 | TRANSISTOR 2SB624-BV4                |
| Q701    | 8-729-903-10 | TRANSISTOR FMW1                      |
| Q702    | 8-729-900-51 | TRANSISTOR DTA114TK                  |
| Q703    | 8-729-903-10 | TRANSISTOR FMW1                      |
| Q704    | 8-729-902-96 | TRANSISTOR FMS1                      |
| Q705    | 8-729-900-51 | TRANSISTOR DTA114TK                  |
| Q706    | 8-729-100-76 | TRANSISTOR 2SA812                    |
| Q707    | 8-729-902-93 | TRANSISTOR FMG4                      |
| Q708    | 8-729-900-51 | TRANSISTOR DTA114TK                  |
| Q710    | 8-729-903-10 | TRANSISTOR FMW1                      |
| Q711    | 8-729-100-76 | TRANSISTOR 2SA812                    |
| Q712    | 8-729-159-64 | TRANSISTOR 2SD596                    |
| Q713    | 8-729-100-76 | TRANSISTOR 2SA812                    |
| Q714    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q715    | 8-729-902-90 | TRANSISTOR FMA4                      |
| Q716    | 8-729-100-76 | TRANSISTOR 2SA812                    |
| Q717    | 8-729-903-10 | TRANSISTOR FMW1                      |
| Q718    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q801    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q802    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q803    | 8-729-159-64 | TRANSISTOR 2SD596                    |
| Q804    | 8-729-162-44 | TRANSISTOR 2SB624-BV4                |
| Q805    | 8-729-100-66 | TRANSISTOR 2SC1623                   |
| Q806    | 8-729-902-93 | TRANSISTOR FMG4                      |
| R1      | 1-216-073-00 | (WM-F200)...METAL CHIP 10K 5% 1/10W  |
| R1      | 1-216-081-00 | (WM-F202)...METAL CHIP 22K 5% 1/10W  |
| R2      | 1-216-013-00 | (WM-F202)...METAL CHIP 33 5% 1/10W   |
| R2      | 1-216-025-00 | (WM-F200)...METAL CHIP 100 5% 1/10W  |
| R3      | 1-216-069-00 | (WM-F200)...METAL CHIP 6.8K 5% 1/10W |
| R4      | 1-216-025-00 | (WM-F200)...METAL CHIP 100 5% 1/10W  |
| R5      | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R6      | 1-216-013-00 | METAL CHIP 33 5% 1/10W               |
| R7      | 1-216-089-00 | METAL CHIP 47K 5% 1/10W              |
| R8      | 1-216-013-00 | METAL CHIP 33 5% 1/10W               |
| R9      | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R10     | 1-216-085-00 | METAL CHIP 33K 5% 1/10W              |
| R11     | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R12     | 1-216-085-00 | METAL CHIP 33K 5% 1/10W              |
| R13     | 1-216-013-00 | METAL CHIP 33 5% 1/10W               |
| R14     | 1-216-085-00 | METAL CHIP 33K 5% 1/10W              |
| R15     | 1-216-093-00 | (WM-F200)...METAL CHIP 68K 5% 1/10W  |
| R16     | 1-216-037-00 | METAL CHIP 330 5% 1/10W              |
| R25     | 1-216-093-00 | METAL CHIP 68K 5% 1/10W              |
| R26     | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R27     | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R28     | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R29     | 1-216-025-00 | METAL CHIP 100 5% 1/10W              |
| R30     | 1-216-113-00 | METAL CHIP 470K 5% 1/10W             |
| R31     | 1-216-049-00 | METAL CHIP 1K 5% 1/10W               |
| R32     | 1-216-037-00 | METAL CHIP 330 5% 1/10W              |
| R33     | 1-216-049-00 | METAL CHIP 1K 5% 1/10W               |
| R34     | 1-216-073-00 | METAL CHIP 10K 5% 1/10W              |

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## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description            |      |    |       |  |
|---------|--------------|------------------------|------|----|-------|--|
| R35     | 1-216-069-00 | METAL CHIP             | 6.8K | 5% | 1/10W |  |
| R36     | 1-216-069-00 | METAL CHIP             | 6.8K | 5% | 1/10W |  |
| R37     | 1-216-049-00 | METAL CHIP             | 1K   | 5% | 1/10W |  |
| R38     | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R39     | 1-216-049-00 | (WM-F202)...METAL CHIP | 1K   | 5% | 1/10W |  |
| R40     | 1-216-073-00 | (WM-F202)...METAL CHIP | 10K  | 5% | 1/10W |  |
| R41     | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R42     | 1-216-013-00 | METAL CHIP             | 33   | 5% | 1/10W |  |
| R43     | 1-216-085-00 | METAL CHIP             | 33K  | 5% | 1/10W |  |
| R44     | 1-216-113-00 | METAL CHIP             | 470K | 5% | 1/10W |  |
| R46     | 1-216-025-00 | METAL CHIP             | 100  | 5% | 1/10W |  |
| R47     | 1-216-049-00 | METAL CHIP             | 1K   | 5% | 1/10W |  |
| R48     | 1-216-097-00 | METAL CHIP             | 100K | 5% | 1/10W |  |
| R49     | 1-216-056-00 | METAL CHIP             | 2K   | 5% | 1/10W |  |
| R51     | 1-216-066-00 | METAL CHIP             | 5.1K | 5% | 1/10W |  |
| R53     | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R101    | 1-216-037-00 | METAL CHIP             | 330  | 5% | 1/10W |  |
| R102    | 1-216-069-00 | METAL CHIP             | 6.8K | 5% | 1/10W |  |
| R103    | 1-216-071-00 | METAL CHIP             | 8.2K | 5% | 1/10W |  |
| R104    | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R105    | 1-216-053-00 | METAL CHIP             | 1.5K | 5% | 1/10W |  |
| R106    | 1-216-045-00 | METAL CHIP             | 680  | 5% | 1/10W |  |
| R107    | 1-216-049-00 | METAL CHIP             | 1K   | 5% | 1/10W |  |
| R108    | 1-216-041-00 | METAL CHIP             | 470  | 5% | 1/10W |  |
| R109    | 1-216-121-00 | METAL CHIP             | 1M   | 5% | 1/10W |  |
| R110    | 1-216-087-00 | METAL CHIP             | 39K  | 5% | 1/10W |  |
| R111    | 1-216-093-00 | METAL CHIP             | 68K  | 5% | 1/10W |  |
| R112    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R113    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R114    | 1-216-112-00 | METAL CHIP             | 430K | 5% | 1/10W |  |
| R115    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R116    | 1-216-089-00 | METAL CHIP             | 47K  | 5% | 1/10W |  |
| R117    | 1-216-057-00 | METAL CHIP             | 2.2K | 5% | 1/10W |  |
| R118    | 1-216-298-00 | METAL CHIP             | 2.2  | 5% | 1/10W |  |
| R201    | 1-216-037-00 | METAL CHIP             | 330  | 5% | 1/10W |  |
| R202    | 1-216-069-00 | METAL CHIP             | 6.8K | 5% | 1/10W |  |
| R203    | 1-216-071-00 | METAL CHIP             | 8.2K | 5% | 1/10W |  |
| R204    | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R205    | 1-216-053-00 | METAL CHIP             | 1.5K | 5% | 1/10W |  |
| R206    | 1-216-045-00 | METAL CHIP             | 680  | 5% | 1/10W |  |
| R207    | 1-216-049-00 | METAL CHIP             | 1K   | 5% | 1/10W |  |
| R208    | 1-216-041-00 | METAL CHIP             | 470  | 5% | 1/10W |  |
| R209    | 1-216-121-00 | METAL CHIP             | 1M   | 5% | 1/10W |  |
| R210    | 1-216-087-00 | METAL CHIP             | 39K  | 5% | 1/10W |  |
| R211    | 1-216-093-00 | METAL CHIP             | 68K  | 5% | 1/10W |  |
| R212    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R213    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R214    | 1-216-112-00 | METAL CHIP             | 430K | 5% | 1/10W |  |
| R215    | 1-216-061-00 | METAL CHIP             | 3.3K | 5% | 1/10W |  |
| R216    | 1-216-089-00 | METAL CHIP             | 47K  | 5% | 1/10W |  |
| R217    | 1-216-057-00 | METAL CHIP             | 2.2K | 5% | 1/10W |  |
| R218    | 1-216-298-00 | METAL CHIP             | 2.2  | 5% | 1/10W |  |
| R301    | 1-216-041-00 | METAL CHIP             | 470  | 5% | 1/10W |  |
| R302    | 1-216-009-00 | METAL CHIP             | 22   | 5% | 1/10W |  |
| R303    | 1-216-121-00 | METAL CHIP             | 1M   | 5% | 1/10W |  |
| R304    | 1-216-073-00 | METAL CHIP             | 10K  | 5% | 1/10W |  |
| R305    | 1-216-085-00 | METAL CHIP             | 33K  | 5% | 1/10W |  |
| R306    | 1-216-049-00 | METAL CHIP             | 1K   | 5% | 1/10W |  |

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description |      |    |       |  |
|---------|--------------|-------------|------|----|-------|--|
| R308    | 1-216-089-00 | METAL CHIP  | 47K  | 5% | 1/10W |  |
| R309    | 1-216-103-00 | METAL CHIP  | 180K | 5% | 1/10W |  |
| R310    | 1-216-105-00 | METAL CHIP  | 220K | 5% | 1/10W |  |
| R311    | 1-216-073-00 | METAL CHIP  | 10K  | 5% | 1/10W |  |
| R312    | 1-216-121-00 | METAL CHIP  | 1M   | 5% | 1/10W |  |
| R313    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R314    | 1-216-025-00 | METAL CHIP  | 100  | 5% | 1/10W |  |
| R315    | 1-216-048-00 | METAL CHIP  | 910  | 5% | 1/10W |  |
| R316    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R317    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R318    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R319    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R320    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R321    | 1-216-009-00 | METAL CHIP  | 22   | 5% | 1/10W |  |
| R401    | 1-216-041-00 | METAL CHIP  | 470  | 5% | 1/10W |  |
| R402    | 1-216-057-00 | METAL CHIP  | 2.2K | 5% | 1/10W |  |
| R403    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R404    | 1-216-081-00 | METAL CHIP  | 22K  | 5% | 1/10W |  |
| R405    | 1-216-105-00 | METAL CHIP  | 220K | 5% | 1/10W |  |
| R406    | 1-216-087-00 | METAL CHIP  | 39K  | 5% | 1/10W |  |
| R407    | 1-216-298-00 | METAL CHIP  | 2.2  | 5% | 1/10W |  |
| R408    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R409    | 1-216-017-00 | METAL CHIP  | 47   | 5% | 1/10W |  |
| R401    | 1-216-073-00 | METAL CHIP  | 10K  | 5% | 1/10W |  |
| R602    | 1-216-073-00 | METAL CHIP  | 10K  | 5% | 1/10W |  |
| R603    | 1-216-085-00 | METAL CHIP  | 33K  | 5% | 1/10W |  |
| R604    | 1-216-083-00 | METAL CHIP  | 27K  | 5% | 1/10W |  |
| R605    | 1-216-089-00 | METAL CHIP  | 47K  | 5% | 1/10W |  |
| R606    | 1-216-077-00 | METAL CHIP  | 15K  | 5% | 1/10W |  |
| R607    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R608    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R609    | 1-216-001-00 | METAL CHIP  | 10   | 5% | 1/10W |  |
| R610    | 1-216-101-00 | METAL CHIP  | 150K | 5% | 1/10W |  |
| R611    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R612    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R613    | 1-216-101-00 | METAL CHIP  | 150K | 5% | 1/10W |  |
| R614    | 1-216-001-00 | METAL CHIP  | 10   | 5% | 1/10W |  |
| R615    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R616    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R617    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R618    | 1-216-091-00 | METAL CHIP  | 56K  | 5% | 1/10W |  |
| R701    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R702    | 1-216-057-00 | METAL CHIP  | 2.2K | 5% | 1/10W |  |
| R703    | 1-216-035-00 | METAL CHIP  | 270  | 5% | 1/10W |  |
| R704    | 1-216-105-00 | METAL CHIP  | 220K | 5% | 1/10W |  |
| R705    | 1-216-049-00 | METAL CHIP  | 1K   | 5% | 1/10W |  |
| R706    | 1-216-081-00 | METAL CHIP  | 22K  | 5% | 1/10W |  |
| R707    | 1-216-085-00 | METAL CHIP  | 33K  | 5% | 1/10W |  |
| R708    | 1-216-025-00 | METAL CHIP  | 100  | 5% | 1/10W |  |
| R709    | 1-216-085-00 | METAL CHIP  | 33K  | 5% | 1/10W |  |
| R710    | 1-216-073-00 | METAL CHIP  | 10K  | 5% | 1/10W |  |
| R711    | 1-216-097-00 | METAL CHIP  | 100K | 5% | 1/10W |  |
| R712    | 1-216-198-00 | METAL CHIP  | 1K   | 5% | 1/8W  |  |
| R713    | 1-216-121-00 | METAL CHIP  | 1M   | 5% | 1/10W |  |
| R714    | 1-216-109-00 | METAL CHIP  | 330K | 5% | 1/10W |  |
| R715    | 1-216-121-00 | METAL CHIP  | 1M   | 5% | 1/10W |  |
| R716    | 1-216-121-00 | METAL CHIP  | 1M   | 5% | 1/10W |  |

SEE ADDITIONAL  
INFORMATION

## ELECTRICAL PARTS

| Ref.No. | Part No.     | Description                            |
|---------|--------------|----------------------------------------|
| R717    | 1-216-109-00 | METAL CHIP 330K 5% 1/10W               |
| R718    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R719    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R720    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R721    | 1-216-073-00 | METAL CHIP 10K 5% 1/10W                |
| R722    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R723    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R724    | 1-216-073-00 | METAL CHIP 10K 5% 1/10W                |
| R725    | 1-216-025-00 | METAL CHIP 100 5% 1/10W                |
| R726    | 1-216-121-00 | METAL CHIP 1M 5% 1/10W                 |
| R727    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R728    | 1-216-121-00 | METAL CHIP 1M 5% 1/10W                 |
| R729    | 1-216-121-00 | METAL CHIP 1M 5% 1/10W                 |
| R730    | 1-216-089-00 | METAL CHIP 47K 5% 1/10W                |
| R731    | 1-216-109-00 | METAL CHIP 330K 5% 1/10W               |
| R732    | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W               |
| R733    | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W               |
| R734    | 1-216-109-00 | METAL CHIP 330K 5% 1/10W               |
| R735    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R736    | 1-216-097-00 | METAL CHIP 100K 5% 1/10W               |
| R801    | 1-216-113-00 | METAL CHIP 470K 5% 1/10W               |
| R802    | 1-216-007-00 | METAL CHIP 18 5% 1/10W                 |
| R803    | 1-216-035-00 | METAL CHIP 270 5% 1/10W                |
| R804    | 1-216-085-00 | METAL CHIP 33K 5% 1/10W                |
| R805    | 1-216-029-00 | METAL CHIP 150 5% 1/10W                |
| R806    | 1-216-121-00 | METAL CHIP 1M 5% 1/10W                 |
| RV1     | 1-230-989-11 | RES, ADJ, METAL GLAZE 4.7K (VCO)       |
| RV2     | 1-230-991-11 | RES, ADJ, METAL GLAZE 22K (F MIN)      |
| RV3     | 1-230-991-11 | RES, ADJ, METAL GLAZE 22K (F MAX)      |
| RV4     | 1-237-139-11 | RES, VAR, CARBON (TUNING) 100K         |
| RV5     | 1-230-994-11 | RES, ADJ, METAL GLAZE 220K (B+)        |
| RV101   | 1-237-006-11 | RES, ADJ, METAL GLAZE 47K (PB LEVEL L) |
| RV201   | 1-237-006-11 | RES, ADJ, METAL GLAZE 47K (PB LEVEL R) |
| RV301   | 1-230-955-11 | RES, VAR, CARBON 10K/10K (VOLUME)      |
| RV601   | 1-237-004-11 | RES, ADJ, METAL GLAZE 10K (TAPE SPEED) |
| S1      | 1-570-402-11 | SWITCH, SLIDE (FUNCTION TAPE-RADIO)    |
| S2      | 1-570-397-11 | SWITCH, SLIDE (BAND)                   |
| S301    | 1-554-613-00 | SWITCH, SLIDE (PLAYBACK EQ)            |
| S302    | 1-570-397-11 | SWITCH, SLIDE (DOLBY NR)               |
| S303    | 1-570-402-11 | SWITCH, SLIDE (ISS)                    |
| S304    | 1-570-399-11 | SWITCH, SLIDE (FWD/REV)                |
| S305    | 1-570-400-11 | SWITCH, SLIDE (REC/PB)                 |
| S701    | 1-570-548-11 | SWITCH, LEAF (POWER/FF.REW)            |
| S702    | 1-570-398-11 | SWITCH (POEN/CLOSE)                    |
| S703    | 1-570-395-11 | SWITCH, LEAF (DIRECTION)               |
| T1      | 1-404-583-11 | IFT (AM)                               |
| T2      | 1-406-177-11 | COIL (AM OSC)                          |
| T3      | 1-448-302-11 | TRANSFORMER, DC-DC CONVERTER           |
| T401    | 1-433-310-11 | TRANSFORMER, BIAS OSCILLATION          |
| T801    | 1-447-864-11 | TRANSFORMER, DC-DC CONVERTER           |

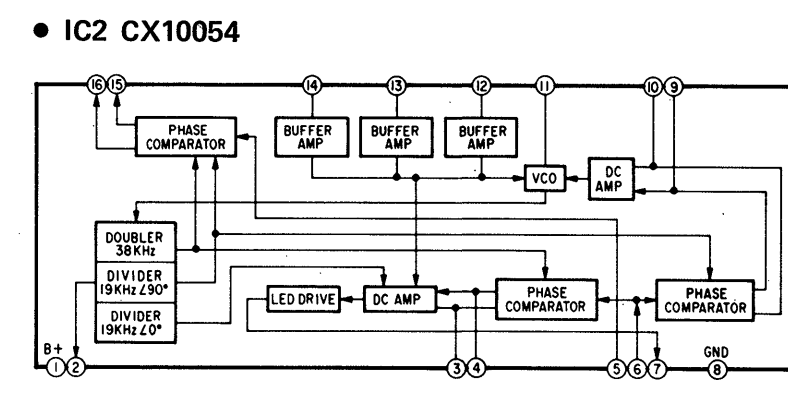
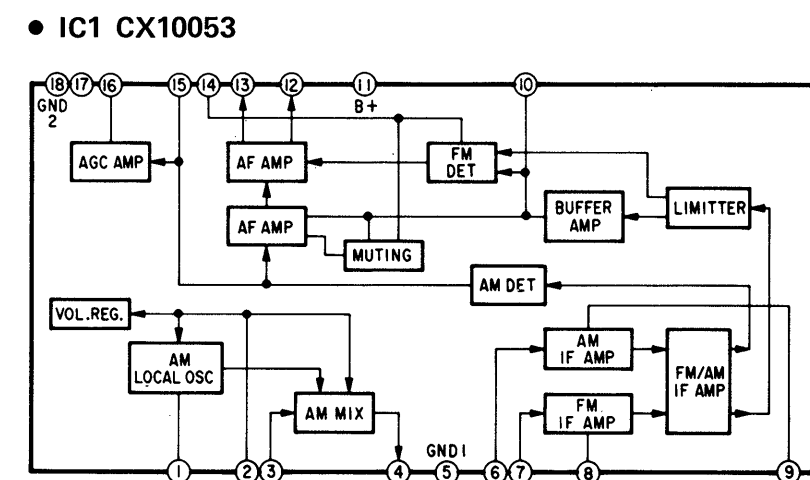
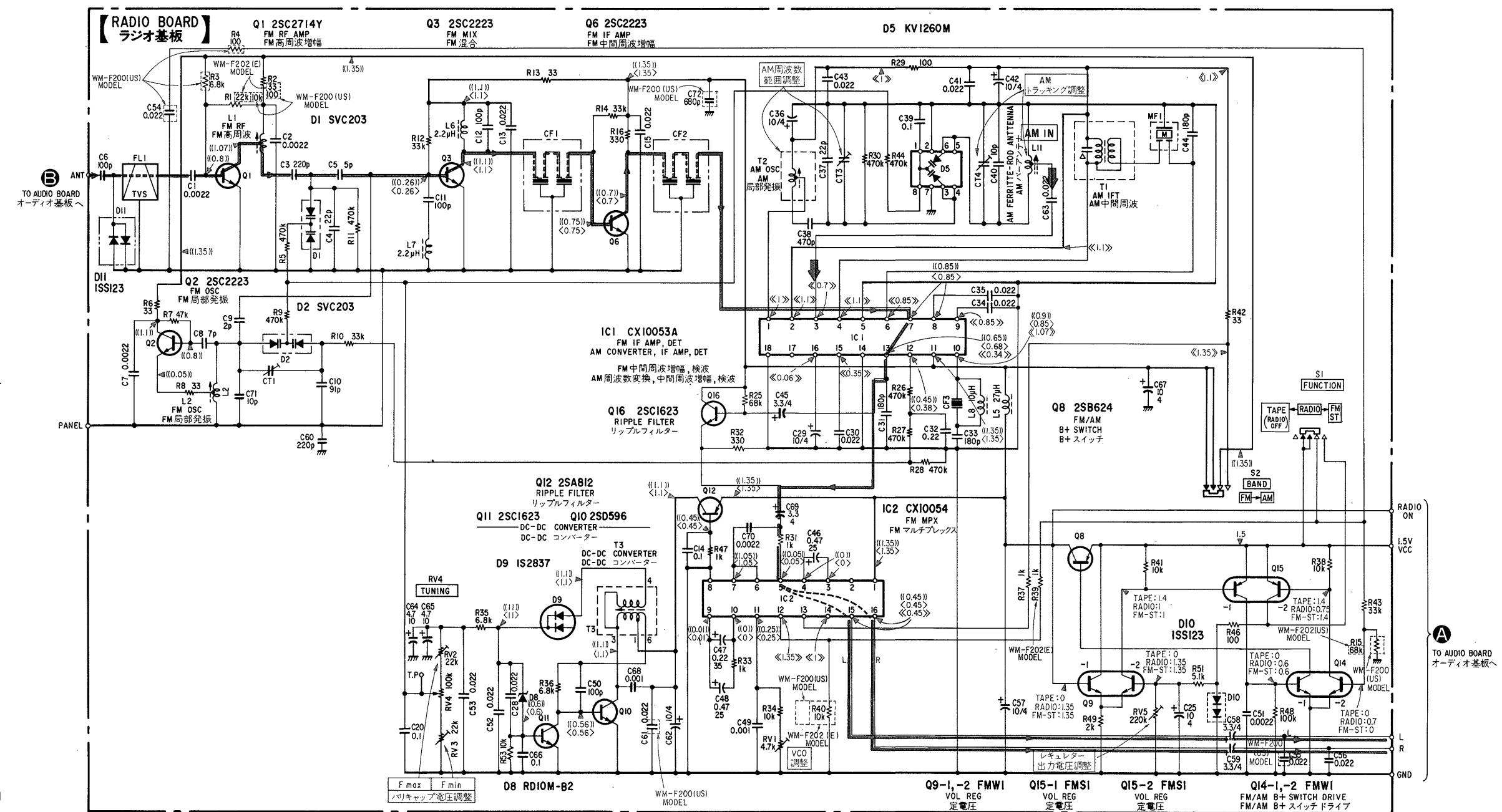
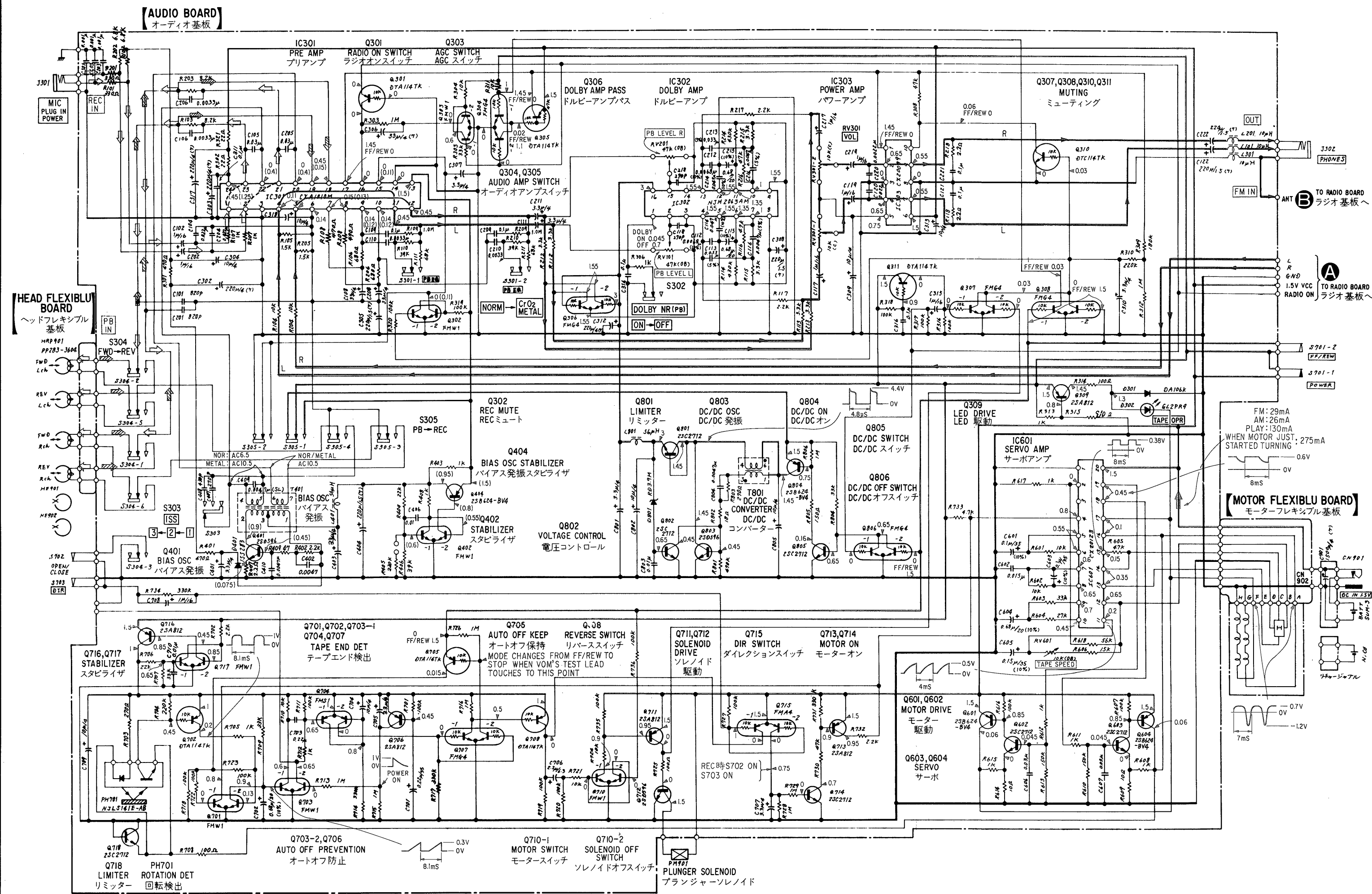
## ACCESSORY &amp; PACKING MATERIAL

| Part No.      | Description                                |
|---------------|--------------------------------------------|
| 1-528-176-11  | (WM-F200)...BATTERY, STORAGE (NC-5WM)      |
| 1-528-181-11  | (WM-F200)...BATTERY CHARGER (BC-7)         |
| 1-542-071-11  | MICROPHONE (C-3001)                        |
| 3-329-793-02  | LID, CUSHION                               |
| 3-329-792-03  | (WM-F200)...CUSHION                        |
| 3-333-133-01  | (WM-F202)...CUSHION                        |
| 3-331-028-01  | (WM-F200)...SPACER                         |
| 3-331-134-01  | (WM-F202)...SPACER (B)                     |
| 3-333-131-01  | (WM-F202)...INDIVIDUAL CARTON              |
| 3-333-136-01  | (WM-F200)...INDIVIDUAL CARTON              |
| 3-333-175-01  | CASE, CARRYING                             |
| 3-527-213-00  | (WM-F202)...LABEL, SERIAL NUMBER           |
| *3-701-999-00 | (WM-F200)...LABEL, SERIAL NUMBER           |
| 3-701-613-01  | (WM-F202:ATTACHMENT)...BAG, POLYETHYLENE   |
| 3-701-622-00  | BAG, POLYETHYLENE                          |
| 3-703-895-01  | (WM-F202:BLACK)...LABEL, COLOR             |
| 3-703-906-01  | (WM-F202:SILVER)...LABEL, COLOR            |
| 3-704-080-01  | (WM-F202:RED)...LABEL, GENERAL DISCERN     |
| 3-704-086-01  | (WM-F202:BLACK)...LABEL, GENERAL DISCERN   |
| 3-704-087-01  | (WM-F202:SILVER)...LABEL, GENERAL DISCERN  |
| 3-764-193-11  | (WM-F202)...INSTRUCTION                    |
| 3-765-092-21  | (WM-F200)...MANUAL, INSTRUCTION            |
| 3-765-092-41  | (WM-F202)...MANUAL, INSTRUCTION            |
| 3-795-748-21  | (WM-F200)...SAFETY INSTRUCTIONS, HEADPHONE |
| 8-952-236-90  | (WM-F202)...HEADPHONE MDR-A212/J (B) SET   |
| 8-952-266-94  | (WM-F200)...HEADPHONE MDR-A10L/B SET       |
| X-3324-513-1  | STAND ASSY, MICROPHONE                     |
| X-3329-657-1  | (WM-F202)...ATTACHMENT ASSY                |
| X-3329-691-1  | CASE (C) ASSY, BATTERY                     |

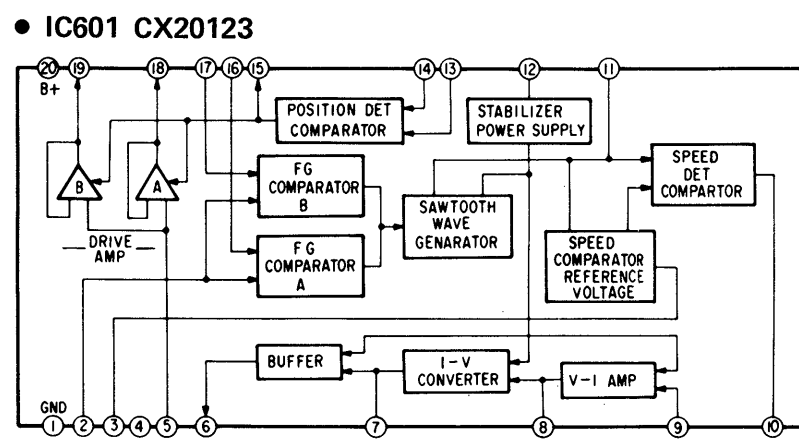
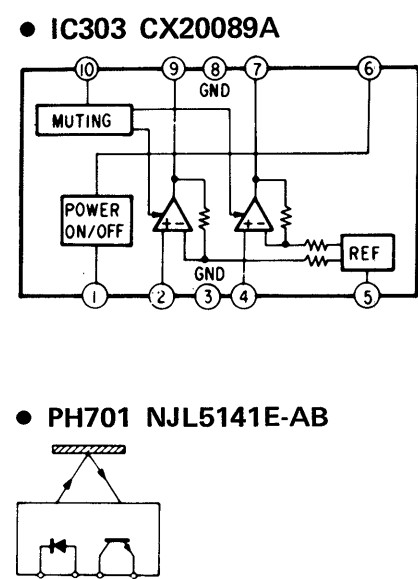
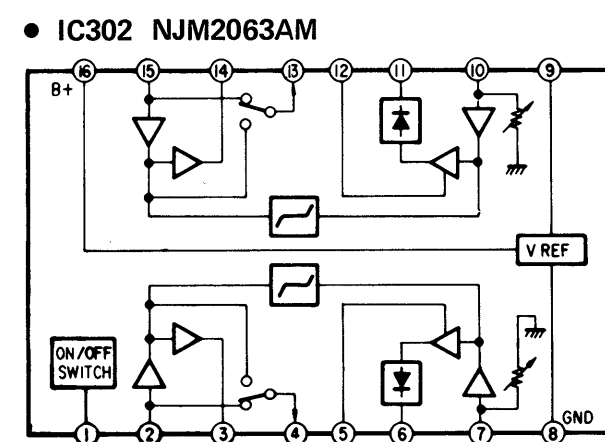
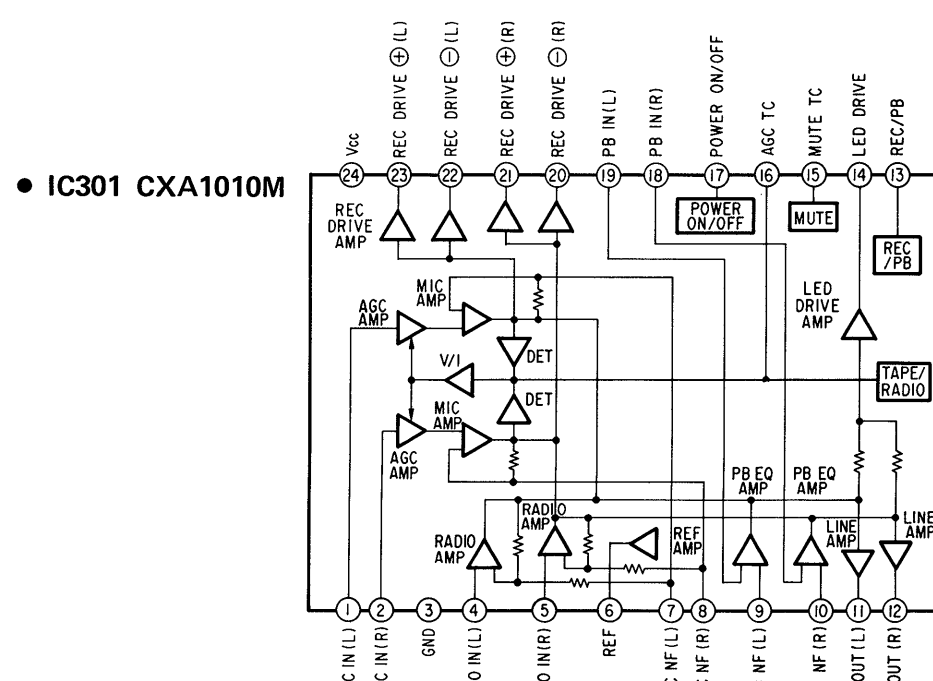


**SONY®**  
**STEREO CASSETTE-CORDER**  
**WM-F200/F202**

### SCHEMATIC DIAGRAM

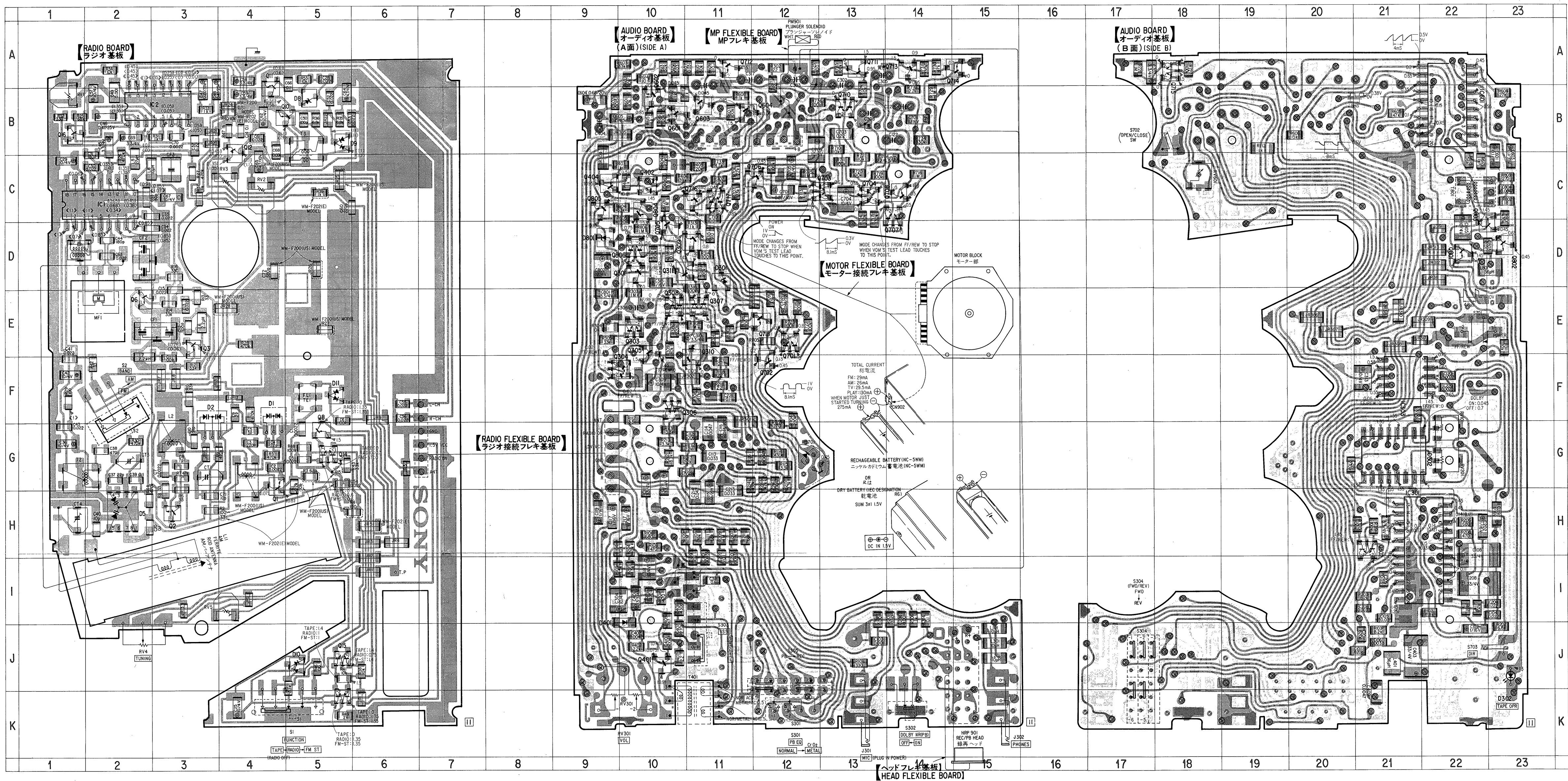


- **Note:**
  - All capacitors are in  $\mu\text{F}$  unless otherwise noted, pF:  $10^{-12}$  50WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $1/10\text{W}$  or less unless otherwise specified.
  - $\Delta$ : internal component.
  - $\rightarrow$ : main signal path
  - $\rightarrow$ : REC signal path
  - $\rightarrow$ : PB signal path
  - $\text{---}$ : B+ bus.
  - $\text{---}$ : B- bus.
  - $\square$ : adjustment for repair.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Total current is measured with no cassette installed.
  - Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 k $\Omega$ /V).
- Voltage variations may be noted due to normal production tolerances.
- Power voltage is 1.5 V and fed with regulated dc power supply from batteries.
- Voltages are dc with respect to ground in playback mode.
- No mark: PLAY
  - $\rightarrow$ : JE REC
- Waveforms are taken to ground in playback mode by using oscilloscope.
- Voltage variations may be noted due to normal production tolerances.



SEE ADDITIONAL  
INFORMATION

**(WMM-F200/F202)**



|                                                                                                          |                                                                                                               |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <p><b>ISS283</b></p>  | <p><b>CXA1010M-T1</b></p>  |
| <p><b>1SS123</b></p>  | <p><b>CX20123</b></p>                                                                                         |

**Note:**

- — : parts extracted from the conductor side
- ⊗ : Through hole.
- [hatched] : component-side pattern.

| Ref. No.                     | Location                    | Ref. No.                 | Location                     | Ref. No.                     | Location                 | Ref. No.             | Location             | Ref. No.             | Location             | Ref. No.                     | Location                    |
|------------------------------|-----------------------------|--------------------------|------------------------------|------------------------------|--------------------------|----------------------|----------------------|----------------------|----------------------|------------------------------|-----------------------------|
| D1<br>D2                     | F-4<br>F-3                  | IC1<br>IC2<br>IC301      | C-2<br>B-3<br>H-22           | Q8<br>Q9<br>Q10              | G-5<br>K-5<br>B-5        | Q305<br>Q306<br>Q307 | E-10<br>F-10<br>E-11 | Q603<br>Q604<br>Q701 | B-11<br>B-12<br>E-12 | Q712<br>Q713<br>Q714         | A-11<br>A-14<br>A-15        |
| D5<br>D8                     | H-2<br>B-5                  | IC302<br>IC303<br>IC601  | G-21<br>F-21<br>B-22         | Q11<br>Q12<br>Q14            | A-4<br>B-4<br>G-5        | Q308<br>Q309<br>Q310 | E-10<br>D-11<br>E-11 | Q702<br>Q703<br>Q704 | E-12<br>C-13<br>C-13 | Q715<br>Q716<br>Q717         | A-18<br>C-11<br>C-11        |
| D9<br>D10<br>D11             | B-5<br>J-5<br>F-5           | PH701                    | G-12                         | Q15<br>Q16<br>Q301           | J-5<br>B-1<br>D-10       | Q311<br>Q401<br>Q402 | D-10<br>J-10<br>C-10 | Q705<br>Q706<br>Q707 | D-10<br>C-12<br>C-14 | Q718<br>Q801<br>Q802         | E-12<br>D-22<br>D-23        |
| D301<br>D302<br>D401<br>D801 | D-11<br>K-23<br>I-10<br>D-9 | Q1<br>Q2<br>Q3<br><br>Q6 | G-4<br>H-3<br>E-3<br><br>E-2 | <br><br>Q302<br>Q303<br>Q304 | <br>H-21<br>E-10<br>F-10 | Q404<br>Q601<br>Q602 | C-9<br>B-10<br>B-10  | Q708<br>Q710<br>Q711 | C-14<br>B-13<br>A-13 | Q803<br>Q804<br>Q805<br>Q806 | C-22<br>C-10<br>C-9<br>D-10 |

# WM-F200/F202

## SERVICE MANUAL

• WM-F200  
*US Model*

## SUPPLEMENT

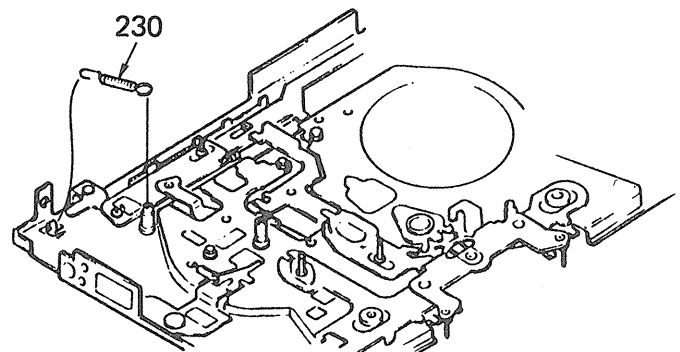
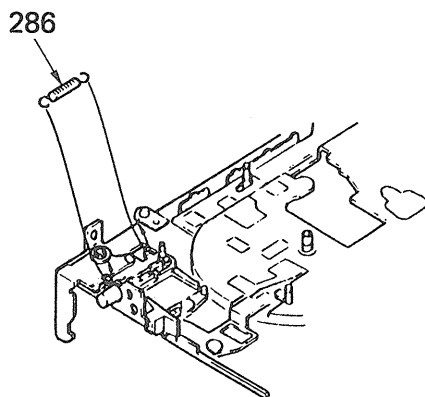
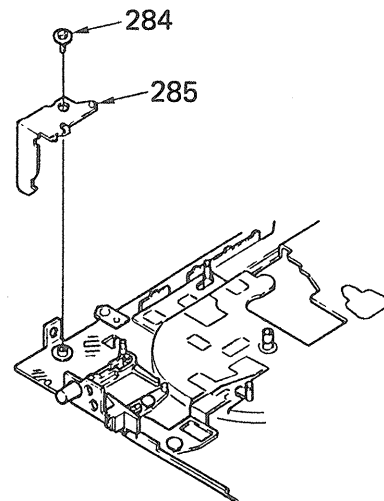
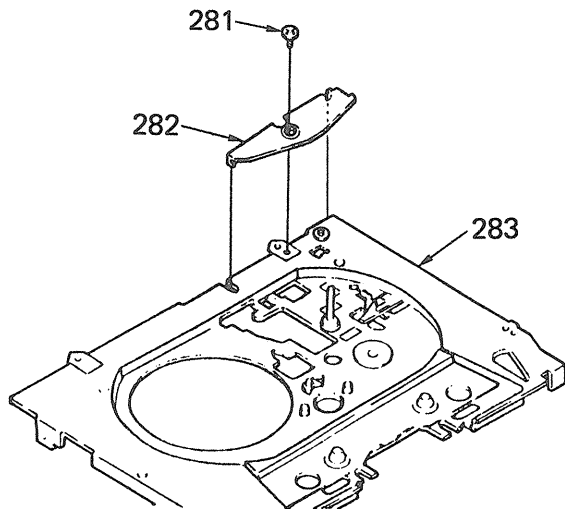
• WM-F202  
*E Model*

- File this supplement with the service manual.

No. 1  
February, 1987

**SUBJECT: Changes On Mechanical Parts  
For Better Tape Ejection**

- SEE NEXT PAGE FOR PARTS INFORMATION.



STEREO CASSETTE-CORDER  
**SONY**<sup>®</sup>

TC

| <b>No.</b> | <b>NEW ADDITION,<br/>CHANGE OR<br/>DELETION</b> | <b>PART No.</b> | <b>DESCRIPTION</b>        |
|------------|-------------------------------------------------|-----------------|---------------------------|
| 15         | CHANGE                                          | 3-333-149-03    | ORNAMENT (R), REEL        |
| 230        | DELETION                                        | 3-331-083-01    | SPRING, TENSION           |
| 281        | ADDITION                                        | 3-333-124-01    | PRECISION STEPSCREW, M1.4 |
| 282        | ADDITION                                        | *3-335-942-01   | LEVER (B), EJECT          |
| 283        | CHANGE                                          | X-3329-795-1    | CHASSIS ASSY              |
| 284        | ADDITION                                        | 3-703-502-01    | SCREW PWH 1.4 x 1.6       |
| 285        | ADDITION                                        | *3-335-943-01   | LEVER (A), EJECT          |
| 286        | ADDITION                                        | 3-337-964-01    | SPRING, TENSION           |

# WM-F200/F202

## SERVICE MANUAL

*US Model*  
*E Model*

### SUPPLEMENT-2

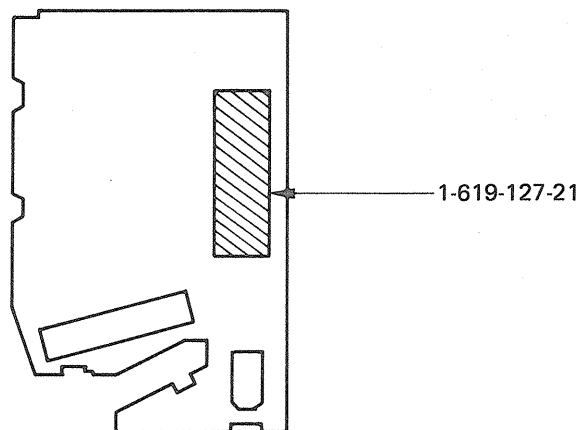
File this Supplement with the Service Manual.

Subject: CIRCUIT CHANGE

The circuit has been changed.  
Because of this change, radio board and electrical parts have also been changed.

- PART NUMBER OF NEW RADIO BOARD TO IDENTIFY

[ RADIO BOARD ]



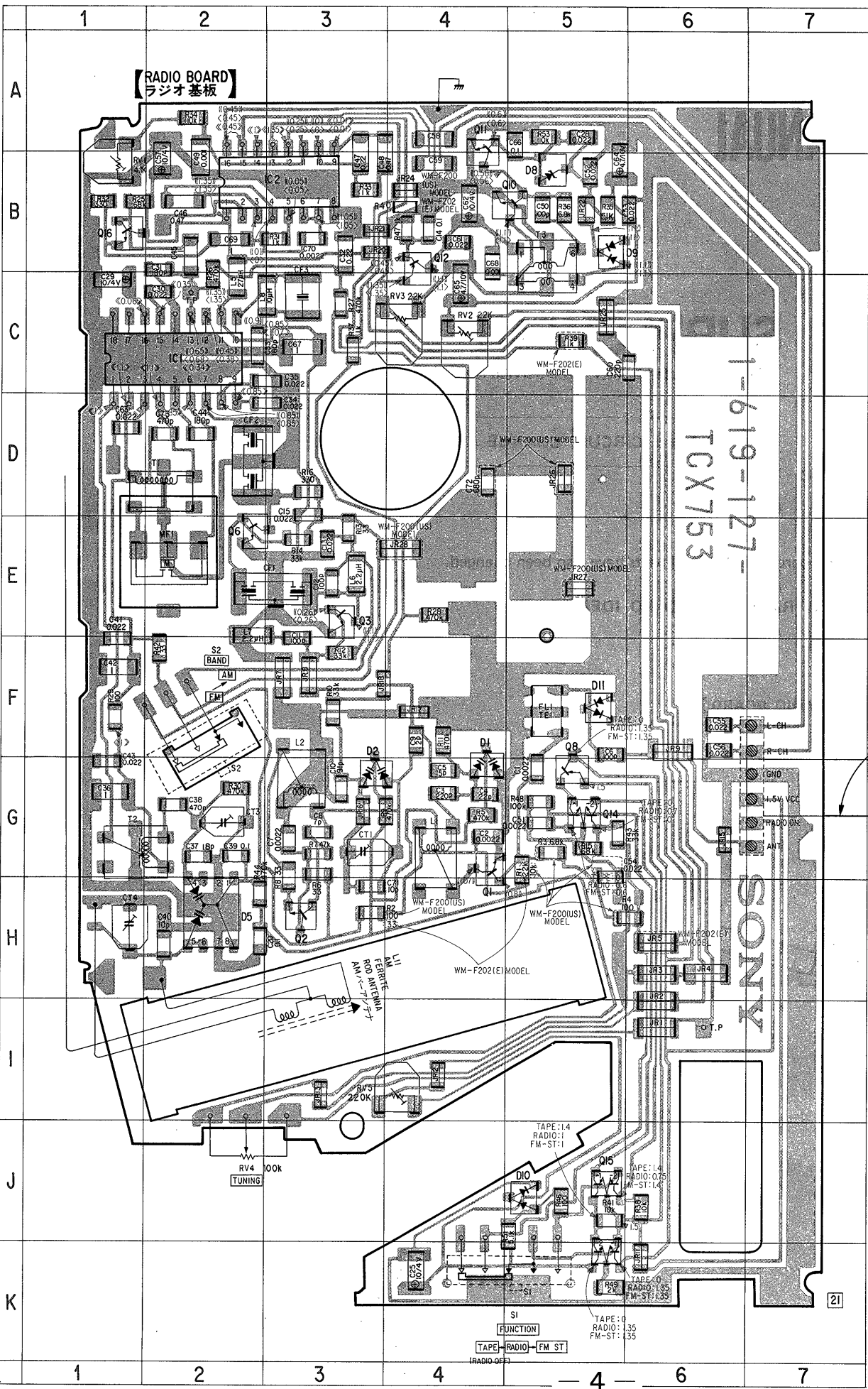
STEREO CASSETTE-CORDER  
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TC

## ● OTHER CHANGES ON ELECTRICAL PARTS

| REF. NO. | PART NUMBER                        |                |     |       |  |                                 |               |     |       |
|----------|------------------------------------|----------------|-----|-------|--|---------------------------------|---------------|-----|-------|
|          | DESCRIPTION                        |                |     |       |  |                                 |               |     |       |
|          | FORMER                             |                |     |       |  | NEW                             |               |     |       |
| C36      | 1-135-104-00<br>TANTAL, CHIP       | 10 $\mu$ F     | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C37      | 1-163-101-00<br>CERAMIC, CHIP      | 22pF           | 5%  | 50V   |  | 1-163-163-00<br>CERAMIC, CHIP   | 18pF          | 5%  | 50V   |
| C42      | 1-135-104-00<br>TANTAL, CHIP       | 10 $\mu$ F     | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C45      | 1-135-103-00<br>TANTAL, CHIP       | 3.3 $\mu$ F    | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C46      | 1-135-083-00<br>TANTAL, CHIP       | 0.47 $\mu$ F   | 10% | 25V   |  | 1-162-637-11<br>CERAMIC, CHIP   | 0.47 $\mu$ F  | Z%  | 16V   |
| C47      | 1-135-072-21<br>TANTAL, CHIP       | 0.22 $\mu$ F   | 10% | 35V   |  | 1-163-081-00<br>CERAMIC, CHIP   | 0.22 $\mu$ F  | Z%  | 25V   |
| C48      | 1-135-083-00<br>TANTAL, CHIP       | 0.47 $\mu$ F   | 10% | 25V   |  | 1-162-637-11<br>CERAMIC, CHIP   | 0.47 $\mu$ F  | Z%  | 16V   |
| C51      | 1-163-013-00<br>CERAMIC, CHIP      | 0.0022 $\mu$ F | 10% | 25V   |  | 1-163-033-00<br>CERAMIC, CHIP   | 0.022 $\mu$ F | 10% | 25V   |
| C58      | 1-135-103-00<br>TANTAL, CHIP       | 3.3 $\mu$ F    | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C59      | 1-135-103-00<br>TANTAL, CHIP       | 3.3 $\mu$ F    | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C67      | 1-135-104-00<br>TANTAL, CHIP       | 10 $\mu$ F     | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C69      | 1-135-103-00<br>TANTAL, CHIP       | 3.3 $\mu$ F    | 10% | 4V    |  | 1-162-638-11<br>CERAMIC, CHIP   | 1.0 $\mu$ F   | Z%  | 16V   |
| C73      | (NOT USED)                         |                |     |       |  | 1-163-133-00<br>CERAMIC, CHIP   | 470pF         | 5%  | 50V   |
| MF1      | 1-527-383-00<br>FILTER, MECHANICAL |                |     |       |  | 1-567-693-11<br>FILTER, CERAMIC |               |     |       |
| R35      | 1-216-069-00<br>METAL CHIP         | 6.8k           | 5%  | 1/10W |  | 1-216-066-00<br>METAL CHIP      | 5.1k          | 5%  | 1/10W |
| T1       | 1-404-583-11<br>IFT (AM)           |                |     |       |  | 1-404-690-11<br>IFT (AM)        |               |     |       |

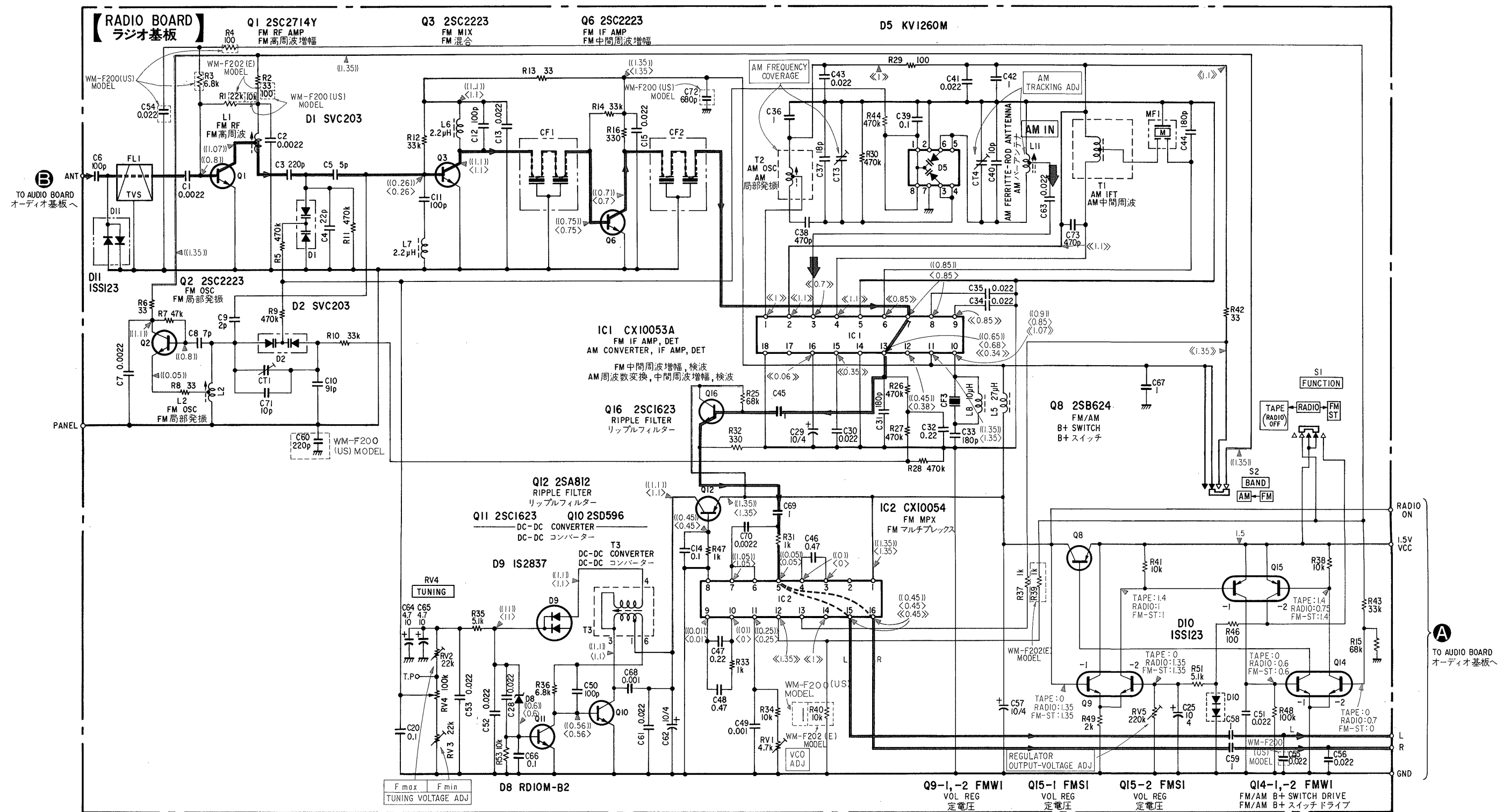
MOUNTING DIAGRAM



● Semiconductors Location

| Ref. No. | Location | Ref. No. | Location | Ref. No. | Location | Ref. No. | Location |
|----------|----------|----------|----------|----------|----------|----------|----------|
| D1       | F-4      | D10      | J-5      | Q2       | H-3      | Q10      | B-4      |
| D2       | F-3      | D11      | F-5      | Q3       | E-3      | Q11      | A-4      |
|          |          |          |          |          |          | Q12      | B-4      |
|          |          |          |          |          |          | Q14      | G-5      |
| D5       | H-2      | IC1      | C-2      | Q6       | D-2      | Q15      | J-5      |
| D8       | B-5      | IC2      | B-2      | Q8       | G-5      | Q16      | B-1      |
| D9       | B-5      | Q1       | G-4      | Q9       | J-5      |          |          |

### SCHEMATIC DIAGRAM



- The chassis assy has also been changed as follows.

| No. | Part No.<br>DESCRIPTION      |                              |
|-----|------------------------------|------------------------------|
|     | INCORRECT                    | CORRECT                      |
| 283 | X-3329-795-1<br>CHASSIS ASSY | A-3035-217-A<br>CHASSIS ASSY |

